Occupational safety and health in the woodworking industries
# TABLE OF CONTENTS

1. OCCUPATIONAL SAFETY IN THE WOOD INDUSTRIES ............. 1  
1.1. Sawmilling ........................................... 1  
1.2. Plywood and fibreboard ................................. 2  
1.3. Carpentry, joinery, furniture making and construction ..... 3  
1.4. Pulp and paper ........................................ 4  
1.5. Others .................................................. 6  

2. OCCUPATIONAL SAFETY RELATED TO TOOLS AND MACHINES . 7  
2.1. Hand tools ............................................. 7  
2.2. Chain-saws ........................................... 7  
2.3. Other saws ............................................ 8  
2.4. Planing machines ..................................... 10  
2.5. Milling machines ..................................... 10  
2.6. Other woodworking machinery ............................ 11  
2.7. Maintenance ........................................... 12  

3. OCCUPATIONAL HEALTH .................................... 13  
3.1. Noise and vibration ................................... 13  
3.1.1. Noise ............................................... 15  
3.1.2. Vibration .......................................... 19  
3.2. Dust and vapour ...................................... 23  
3.3. Wood preservatives ................................... 35  
3.4. Other dangerous substances ............................. 37  
3.5. Fire and explosions ................................... 43  
3.6. Other health hazards .................................. 44  

4. ERGONOMICS .............................................. 47  

5. REGULATIONS AND STANDARDS FOR OCCUPATIONAL SAFETY AND HEALTH IN THE WOOD INDUSTRIES ................. 49  
5.1. Sawmilling ............................................. 49  
5.2. Plywood and fibreboard ................................ 49  
5.3. Carpentry, joinery, furniture making and construction .... 50  
5.4. Pulp and paper ........................................ 50  
5.5. Woodworking machines and equipment ..................... 52  
5.6. Dangerous substances .................................. 59  
5.7. Others .................................................. 61  

6. MISCELLANEOUS ........................................... 63  

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INTRODUCTION

The International Occupational Safety and Health Information Centre (CIS) operates within the International Labour Office (ILO). It offers access to the latest information published all over the world on safety and health matters at the workplace through its computerized bibliographic database.

This bibliography is a compilation of references and summaries of documents contained in the CIS database which specifically relate to the wood industries, the occupational hazards involved and connected preventive measures. It also illustrates the kind of services CIS provides to its users, usually on a subscription basis.

The original documents, the references of which are given with these abstracts, should be obtained from libraries, booksellers, or publishers. Copies can be obtained from CIS National Centres or CIS in Geneva.

For further information on CIS activities you can contact CIS directly at:

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No relationship was found between biorhythm critical days in a blue-collar workforce of 750 employees in a sawmill and the incidence of 1,307 accidents which occurred in a 15-month period in 1977 and 1978. Accidents involving medical treatment or hospitalisation, those involving lost time, and those involving lost time and a change to light work were evaluated separately against emotional, intellectual and physical biorhythm critical day definitions.


Glar effects on visual acuity and contrast sensitivity were studied during outdoor timber yard work (sorting of logs) with two different systems of floodlighting. The binocular visual acuity of 19 volunteers was measured at 40, 55 and 80% contrast and the contrast sensitivity of 14 volunteers at spatial frequencies of 0.5 to 16 cycles/degree. One of the lighting systems used conventional floodlights with symmetrical distribution of the light over a wide area. The other system used a new type of oblique floodlight with asymmetrical light distribution. With the light source 15° from the centre of the visual field, the visual acuity and contrast sensitivity were consistently lower with the conventional type than with the new type of floodlight. Thus, not only is the vision of details impaired by glare but so is the contrast perception of coarse patterns. The workers scored the difference in glare between the two floodlight systems as "great" to "very great".

(42099)


Claims in the Alberta (Canada) sawmill industry showed a 13% increase from 1978 to 1979, and 2 employers accounted for more than half of all claims in 1979. Lost-time injuries accounted for 50% of all claims in this industry, and two-thirds of these claims were reported by workers employed 6 months with their present employer. The lost-time claim rate for the sawmill industry was almost twice the rate for all industries combined.

(41317)

Claims submitted to the Worker's Compensation Board on behalf of the lumber milling industries showed a 14% increase from 1978 to 1979. Lost-time injuries accounted for 55% of all claims. About 30% of these were incurred by workers employed for 1 month or less and almost 21% were incurred by workers aged 20-29 years of age. A total of 64 employers had over 50 claims for every 100 man-years and these 4 employers were also responsible for 26% of all claims in 1979. Both lost-time and total claims rates for the lumber milling industries were twice those for all other industries combined. 3 fatalities were reported in 1978 and 1979. (40209)


Information was collected from 229 sawmills (195 jobs in 3 levels of mechanisation and automation; 340 workers covered). Variables in job characteris­tics and working conditions studied: mental functions, knowledge and experience demanded, variety or monotony of work, social contacts, qual­ity and quantity of paid and unpaid work and non-work activity, age, education, and chemical environmental factors, and work schedule. Data were collected on production process and task analysis, energy expenditure, oxygen consumption and heart rate, sick leave, technology and work organisation (negative, short-cycled tasks; keen concentration; economically important, repetitive work; planning and doing tasks at a paced tempo). An increase in the level of mechanisation and automation only slightly changes the nature of sawmill jobs, but total work structure can be significantly changed by means of reorganisation (e.g. job rotation to increase the variety of the work profile). (31950)

CIS 80-684 The determinants of occupational injury severity: the case of Maine sawmills.. Cooke W.N., Blumenstock M.W. Journal of Safety Research, Fall 1979, Vol.11, No.3, p.115-120. Illus. 3 ref. (In English)

Determinants of injury severity in industry were sought. From a modified epidemiological framework, several hypotheses were developed concerning the relation between the environment/host and severity. These hypotheses were tested against a sample of sawmill injuries using a multiple regression model (severity measured by the number of workdays lost). 4 important hypotheses are supported by the evidence: age shows its expected cur­vilinear relationship; both younger workers and older workers suffer more serious injuries; highly significant is the temporary job assignment variable, suggesting the hypothesis that lack of familiarity with the job increases the risk of injury. Persons injured in hardwood sawmills appear to lose an average of 17 more work days than those injured in softwood sawmills. (33747)

CIS 78-1157 Health and safety guide for sawmills and planing mills.. DHEW (NIOSH) Publication No.78-102. National Institute for Occupa­tional Safety and Health, 4676 Columbia Parkway, Cincinnati, Ohio 45226, USA, July 1977. 116p. Illus. (In English)

Illustrated by humorous drawings and instructive sketches, this booklet describes safe practices encouraging compliance with U.S. health and safety regulations. Chief contents: hazards (conveyors, belts, and rollers; lack of space; lifting equipment; electrical equipment; storage, sorting, etc.); safety in design of mechanical installations (construction and insulating systems, standby generating set in case of mains failure); correct stacking of wood; fire safety instructions drawn up by a Finnish insurance company, applicable to sawmills, veneer preparation, and chipboard manufacture (Gefahrlose Deladen, delanden, Helsinki, Finland, 1978, No.3, p.21-24. Illus. (In Finnish, Swedish)

Fire safety instructions drawn up by a Finnish insurance company, applicable to sawmills, veneer preparation, and chipboard manufacture (Gefahrlose Deladen, delanden, Helsinki, Finland, 1978, No.3, p.21-24. Illus. (In Finnish, Swedish)


Review of the processes, problems and hazards in wood chip drying (dust, harmful substances, noise, heat, fire and explosion) and a report of laborator­y studies on the physical, chemical and thermal phenomena involved: experimental set-up and study of various factors during drying trials (safety, adjustments, air pollution, process profitability). Recommendations were drawn up for the adjustment of dryers, the effectiveness of safety devices, the release of harmful substances and plant design. An appendix gives mathematical relations and examples for dusts and gases. (37288)


Translation of a booklet summarising the results of a survey of working conditions in the Swedish sawmills performed by the Timber Industry Er­gonomics Group. A model sawmill design for the future is also described. Problems discussed are: noise, air pollution; climate; lighting; vibration; body positions and movements; work loads; accidents and safety; psychoso­cial factors. The model considers production, environment, workplaces, safety features and work organisation for timber handling; sawing; edging, raw sorting and sticking; drying; trimming and packing. (20356)


This report contains recommendations for good lighting practice; the desired end results are given rather than specific means of achieving them. After a brief introduction on logging and sawmill operations, survey findings and recommendations are broken down into short chapters: scope of the guide; material flow (sorting, etc.); visibility requirements for specific tasks; illumi­nation level recommendations (quality and quantity); safety considerations; lighting maintenance; energy conservation; emergency lighting. Appendices contain visual task evaluations of typical tasks and relative efficacies of light sources. This document should be used in conjunction with the "American national standard practice for industrial lighting" published in Journal of the Illuminating Engineering Society, Vol.2, No.4, July 1973, p.461 (CIS 74-1015). (21763)

1.2. Plywood and fibreboard


An introduction covering the forces involved in lateral support of sheets of material is followed by descriptions of accidents and of ways to prevent the fall of sheets of fireboard, fibre-reinforced cement, precut concrete or metal. Correct use of carrying handles, fork-lift trucks, tongs and suction pods contributes greatly to safe handling. (47684)


This data sheet identifies the hazards specific to hot log preparation (hot water and steam, conveyor chains, moving blocks, steam pipes, poor visibility) and outlines safety measures to prevent accidents. (44066)


Review of the processes, problems and hazards in wood chip drying (dust, harmful substances, noise, heat, fire and explosion) and a report of laborator­y studies on the physical, chemical and thermal phenomena involved: experimental set-up and study of various factors during drying trials (safety, adjustments, air pollution, process profitability). Recommendations were drawn up for the adjustment of dryers, the effectiveness of safety devices, the release of harmful substances and plant design. An appendix gives mathematical relations and examples for dusts and gases. (37288)


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This booklet describes safe practices in agreement with the U.S. health and safety regulations. Contents: health and safety guidelines (health and safety programme, employee training, recognising and controlling hazards, air contaminants, housekeeping and fires, machine guarding, the industry and programme, employee training, recognising and controlling hazards, air pollution, welding, cutting and brazing, electrical safety); recordkeeping; checklists; information sources.

1.3. Carpentry, joinery, furniture making and construction


Review of the main points to be kept in mind during the design of a new shop or the remodelling of an old one: French laws and regulations; hazards; choice of materials and equipment for the production process; workplace organisation; handling of waste; movement of equipment and personnel; sitting and sitting facilities (lighting, acoustic and thermal insulation, heating, electric equipment and wiring, etc.); safety training of personnel.


The material in this guide illustrates to everyone involved the types of safety and health hazards commonly encountered in this industry. Charts indicate what the hazards are, how they are likely to occur and the means to reduce or eliminate them through engineering controls, work practices, personal protective equipment, administrative controls, and education and training.


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Unit operations covered: aluminium metal working; assay and quality control; electroplating: fluidised bed drying; industrial centrifuging; liquid filtration and clarification; cleaning, forming, working and machining of metals; metallising; mixing and blending; non-destructive inspection; painting and coating; plastics processing; pulverising and micronising; curing, compounding, mixing, extruding, calendering and milling of rubber; spray, vacuum and freeze drying; welding; woodworking and furniture manufacturing. Products covered: colour photographic materials; farm and construction equipment; glass lenses; infrared analysers; inner tubes; jet aircraft engines; lead-acid storage batteries; light guides; liquid scintillation counters; large-scale hazardous; frequently violated regulations; (water and measurement, robots; tyres; two-piece cans.


This study involved 170 furniture factories in Quebec (Canada) employing 4086 workers. An analysis of 567 accidents that happened in the factories during 1980 reveals a significant link between the type of remuneration (fixed salary or piece-work rates), the workplace and the accident risk. The risk was lower among skilled cabinet-makers than it was among unskilled workers; injury was significantly more likely to certain parts of the body (the lumbar column, the wrists and the fingers).

CIS 85-37 Job-made ladders. NSC Data Sheet 1-568-84, National Safety Council, 444 North Michigan Avenue, Chicago, IL 60611, USA, 1984. 6p. Illus. Bibl. (In English)

This data sheet covers the fabrication and installation of ladders that are made on the job and installed as semi-permanent means of employees' travel between elevations. Contents: hazards; ladder fabrication (intended use determines double or single size, proper ladder length, ladder width, lumbar selection, size rails, cleats, testing); ladder installation; inspection and maintenance; appendices (glossary of wood defects; permissible defects in wood used for ladders; acceptable stress-grade lumber).


This guide covers all aspects of occupational safety and health in the window manufacturing industry. Contents: legal requirements in Ontario; specific hazard analysis for each process step; specific concerns (recognition and control, wood preservatives, designated substances, wood dust); physical agents (noise, vibration); safety concerns (woodworking machines, flammable liquids); resource materials (useful publications, associations).

CIS 84-1440 Safety and health guide for the wood pallet manufacturing industry. Industrial Accident Prevention Association, 2 Bloor St. E., Toronto, Ontario M4W 3C2, Canada. 1983. 73p. Bibl. (In English)

Contents of this guide for the manufacture of wood pallets legal requirements in Ontario; specific hazard analysis by process step; occupational health and hygiene concerns (wood preservatives, dust, noise, vibration); special safety concerns (use of saws, grinders, housekeeping); resource materials.


This manual is based on the regulations and standards applicable to safety organisation in the German Democratic Republic. It covers: the worksite, levels of protection, work in confined spaces, transport and storage of materials, use of toxic substances, wood treatment; wood- and metal-working machines, welding and cutting, use of helicopters as lifting devices, excavation, lifting equipment, scaffolding, prefabrication of housing units, construction of industrial and multi-occupant buildings, maintenance. In annexes: the Ordinance on safety and health in the construction industry; a list of occupational diseases; definitions; tables of units, symbols, dimensions and performance characteristics of materials and equipment, descriptions of industrial chemicals.


Results of a statistical study of occupational accidents among carpenters and joiners in Belgium. Comparison between occupational accidents for all professions and occupational accidents in the building industry. Analysis on the basis of accident frequency and severity rates, type of lesion in carpenters and joiners. The prevalence of finger injuries among joiners and the high incidence of accident among immigrant workers are highlighted.


Data sheet: information on occupational disease hazards (other than noise-induced hearing damage) and preventive methods at various stages of making wooden structures, frameworks etc. in the building trades: paths of entry of substances used; their effects on the human body; hazards of exposure to types of wood, glues, wood preservatives, coatings (paints and varnishes); OSH aspects and medical surveillance; personal hygiene (on-site facilities); legislation, regulations; French statutory compensation aspects of recognised occupational diseases in this sector.
This report, prepared by H.M. Factory Inspectorate's National Industry Group for the furniture and woodworking trades, contains sections devoted to: safeguarding of machinery (legal requirements; power feed devices; training and supervision); safe collection of woodwaste (dust explosion risk; sources of ignition; collection systems, ducting, collection units; precautions with collection units where there is a dust explosion risk; explosion vents or panels; fire fighting); wood dust health survey; nasal survey of furniture workers; noise suppression at source; practical advice on the construction of an acoustic enclosure for the multicutter moulding machine; duties of manufacturers and agents. Appendices: statistical tables on: reported accidents in the timber, furniture and woodworking industries, 1975-1977 (breakdown: power and non-power machinery, non-rail transport, falls of persons and of objects, tools, materials handling, etc.); accidents at woodworking machines, 1975-1977; prosecutions and enforcement notices.

CIS 75-1468, detailed mortality data are given for 95 cause-of-death groupings by trade, by union locals and by geographic area. Elevated rates of job-related accidental deaths were mainly among younger workers, and were mostly from falls, falling objects and electrocution. Elevated rates of lung cancer are observed in carpenters and cabinet makers exposed to asbestos. No specific carcinogenic exposure is known which can explain a) elevation of gastrointestinal cancer rates among pile drivers, b) excess of lung, stomach and bladder cancer in urban areas, c) excess of lung cancer in the southeastern states, and d) excess of haematopoietic cancers among woodworking trades and plywood mill workers.


The legislative basis of protection of workers in the German Democratic Republic is followed in this manual by practical questions such as equipment of building sites; rules for scaffold construction; wood preservation; electrical installations on building sites; use of helicopters; woodworking and metalworking equipment; construction equipment and transport; lifting equipment; blasting and demolition work; excavation; housing construction; industrial and public service building construction; fire prevention.

CIS 77-562 Health and safety guide for prefabricated wooden building manufacturers...DHEW Publication No. (NIOSH)76-159, National Institute for Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, Ohio 45226, USA, June 1976. 83p. Illus. (In English)

Illustrated by humorous and instructive drawings, this booklet describes safe practices in agreement with the US regulations and regulations applicable.


The recent expansion in the use of wood for large-scale projects requires the collaboration of several specialised undertakings and increases the risks of accident. This article reviews the main characteristics of wood and especially the specific aspects of assembly of large structures; planning, quantification of personnel, static calculations, production and transport of prefabricated elements, coordination of assembly work, lifting equipment, supports, accident prevention; checklist for each stage of construction.


This report is concerned with the health and safety of persons employed in the furniture and woodworking industries, and contains a description of the work environment, the health hazards of the trade, accident prevention measures, training and supervision, research on new products, and a discussion of the effects of dust, fumes, fibres and noise on health and safety.

This publication deals with the following kinds of auxiliary equipment used with dryers: breaker stacks, size presses, dampening machines, machine glaze cylinders (generalities, description of parts, hazards and general preventive measures). For each type of machine, examples of actual accidents are given: type, circumstances and consequences of accidents; observations and preventive measures to adopt. (46335)


This publication deals with safe utilisation of machinery manufacturing paper from wood pulp, and of machinery used to dry the paper. Summary: hazards, their consequences and prevention; French regulations; the wire end; the reverse press; the smoothing press. (45333)


This guidance publication defines safe systems of work, describes operations requiring them in the paper making industry, gives the legal requirements in the United Kingdom and checklists for the preparation and assessment of safe systems of work, and provides detailed examples in the industry. (41125)

CIS 85-885 Risk analysis in design - Case study in a paper mill (Riskanalys vid projektering - Forsöksverksamhet vid ett pappersbruk), Harms-Ringdahl T. TRITA-AOG-0020, Arbetslyckfallsgrupper, (Occu­pational Accident Research Unit), Kungl. Tekniska Högskolan, Fiskåtorpsväg 15, 100 44 Stockholm, Sweden, 1982. 102p. Illus. 23 ref. (In Swedish)

Risk analysis was done in connection with the rebuilding of a part of a paper mill. Analysis was applied to winding and other machines, and to the layout and transportation of paper rolls. The methods used were: job safety analysis, energy analysis and deviation analysis. As a result, a number of proposals were implemented, improving safety and production. (34714)

CIS 85-849 Paper bag manufacturing. NSC Data Sheet 1-502-84, National Safety Council, 444 North Michigan Ave., Chicago, IL 60611, USA, Rev. 1984. 4p. Illus. 4 ref. (In English)

This data sheet identifies the hazards related to paper bag manufacturing processes and describes safety precautions to be followed. (39224)


Data were collected once a week on 24 practices and 7 conditions in a paper mill and data on injuries with and without lost time were also collected monthly. After posting feedback on safe and unsafe conditions for 6 months, more than half of the 17 divisions in the mill showed improvement. Safe practices increased after feedback was provided on them for 2 months. Injuries were cut in half. (43424)


Contents of this guide: legal requirements in Ontario; specific hazard analysis by process step; chemical hazards; recognition and control; physical hazards; safety precautions and procedures; resource materials. (42249)

CIS 82-2057 The caustic liquor room. NSC Data Sheet 1-214-81, National Safety Council, 444 North Michigan Avenue, Chicago, IL 60611, USA, revised 1981. 4p. Illus. (In English)

Sequence of operations for caustic liquor in a sulfate pulp mill where cooking liquors are made or reconverted for use in processing wood chips by cooking in digesters. Use of lime and attendant hazards; green liquor; bleaching, paper machines (nip points, cutters); strapping and banding rolls; storage; fire protection; loading; rail and truck shipment. (32466)

CIS 79-1803 Handling and storing paper rolls... Data Sheet 1-596-78, Revised 1978, National Safety Council, 444 North Michigan Avenue, Chicago, Illinois 60611, USA, 1978. 15p. Illus. 12 ref. (In English)

This profusely illustrated data sheet gives information on: hazards; types of handling equipment (roll grabs, rotating clamps, forklift trucks, clamp trucks, conveyors and rams); precautions to prevent causes of rolls shifting or falling; training of operators and their protection (escape means from cab, canopy guards, pinches, cuts); strapping and banding rolls; storage; fire protection; loading; rail and truck shipment. (32466)


Based chiefly on examples of accidents, the main sources of hazard in this industry are described, with safety measures and safe practices for workers, technical engineering personnel and management. Sections are devoted to: housekeeping, in-plant transport, production processes (barking, chipping, sulphite and sulfate pulp, digestion, wood grinding, work on pulpers, bleaching, paper machines (nip points, cutters)), storage of paper rolls. (38793)

CIS 77-2063 Workposts, occupational accidents and diseases in the paper-making industry, with special reference to a factory in south-west France (Postes de travail, accidents du travail et maladies professionnelles dans les papeteries et en particulier dans une usine du Sud-Ouest), Plessis, Université de Bordeaux II, Unités d’enseignement et de recherche des sciences médicales, Bordeaux, France, 1977. 103p. Illus. 11 ref. (In French)

MD thesis. Review of wood as raw material and of techniques of wood pulp and paper manufacture. Analysis of workposts at a kraft paper factory, where paper manufacture is highly automated. The physical workload is thus reduced, with a corresponding increase in mental workload. Review of occupational accidents and diseases at this factory and in the industry in general. (30565)

CIS 77-2062 Selfcopying paper (Itsejälentäväpäivät).. Kertokirja 1/77, National Board of Occupational Safety and Health (Työsuojelulaitos), Tampere, Finland, 13 Jan. 1977. 4p. (In Finnish, Swedish)

Abridged version of an information sheet for the paper industry, which emphasises the hazards of this type of machine and the safety measures to be taken. Individual sections are devoted to: pay-off unit; circular knives; web infed; intervention in the event of the web breaking; vacuum waste edge pick-up device; core charging, bonding web ends together and locking in place; pay-off and take-up shafts; pressure roll and guarding of in-running nip; take-up unit; taking off the reel; drive and brake units; noise control; maintenance; emergency stop devices. (39699)
This circular draws the attention of all firms and offices, where large quantities of self-copying paper are handled, to the allergy hazard to which hypersensitive persons are exposed. It prescribes that adequate relative humidity conditions should be maintained in storerooms where stocks of this paper are kept, use of air humidifiers during the central heating season, personal hygiene (handbasins, barrier creams), and staff information. The employer is held responsible for ensuring that the provisions of the circular are observed, to diminish the hazard of skin irritation or allergy.


After some brief statistics on accidents in the paper-making industry, the author takes stock of the hazards in paper winding shops generally (low-back pain, crushing wounds and fractures, cuts) and their causes, and points to the provisions of French legislation applicable to paper winders. The main part of the booklet is devoted to an examination of 36 accidents (with table indicating the date and circumstances of accident, its consequences and the technical measures taken), illustrated by diagrams and figures. The accidents occurred at inrunning nips of the machine when workers felt the web with their hand for imperfections, when correcting faulty winding of the paper or removing a foreign body, when webbing-in, etc.


To prevent these accidents (primarily occurring in the course of materials handling and storage, and in the maintenance and servicing of machinery) this recommendation, which is followed by comments, advocates maximum mechanisation of manual operations for materials handling, protection of personnel engaged in maintenance work on machinery or cleaning or adjusting machinery against accidental starting-up (in particular by locking controls in the "off" position), ensuring that pallets are kept in good condition, and limitation of the height to which products are stacked.


This manual intended for students covers the main aspects of labour protection in forestry and the woodworking industry: microclimate, heating, contamination of workplace air, ventilation, protection of the environment from industrial wastes, dust control equipment, protection against noise and vibration, lighting, water supply and sewage systems, safety devices, ergonomics and occupational psychology, electrical safety, protection against static electricity, fire and explosion protection, general provisions of labour protection.


Results of an ILO-sponsored mission in 1979-1980. Forty risk factors were surveyed in 60 enterprises. The most important chemical factors were organic solvents, organic fibres other than cotton, niosulfur, cotton fibres and skin exposure to harmful substances. The most important physical factors were physical overload, strenuous movements and working postures, noise and bad lighting. The most important miscellaneous factors were unsatisfactory personal protection, lack of changing rooms and washing and toilet facilities, and lack of knowledge about hazards. Specific summaris were ul Kirova, 40a, 101000 Moskva, USSR. The observations provided an estimate of the amount and type of work faced by the national Factories Inspectorate.


Revised and corrected edition of the publication abstracted as CIS 76-1447. Subjects covered: manual, pneumatic and mechanical handling; electricity (prevention of direct or indirect contact); fire risks; steam and hot water under pressure; problems with lighting; noise and vibration; gases, fumes and dust; compressed air; glues, primers, paints and varnishes; tool sharpening; maintenance work; layout of the workplace and of machinery; responsibilities of the employer and the employee.


Contents: socio-economic characteristics (description of the industry, of the companies and of the manpower); social institutions involved (labour unions, employers, government); health and safety risks (occupational injuries, occupational hazards); organisation of safety and health programmes; legislation; (4293)


This manual gives a comprehensive review of the engineering and technology of industrial accident prevention. Individual chapters deal with: design for safety in industrial buildings and plant layout; construction and maintenance of plant facilities; manual handling and material storage; hoisting apparatus and conveyors; ropes, chains and slings; powered industrial trucks; plant railways and elevators; principles of guarding; woodworking machinery; metalworking machinery; cold forming of metals; hot working of metals; woodworking and cutting; hand tools; electrical hazards; flammable and combustible liquids; fire protection; boilers and unfired pressure vessels; safety engineering tables.


Precautions during work on defective electricity poles under various conditions. It was commonly encountered in practice. A distinction is made between trouble-shooting and planned operations which are carried out under less stress. The section on the techniques and their application deals with 2 types of operation: jobs entailing no change in the forces playing on the pole top (e.g. replacement of connectors, shunting overhead fuses) and jobs entailing a modification of the stresses on the pole top (e.g. transferring or removing the lines). Each situation is considered in relation to the equipment available to the site manager. Review of pole-guying techniques. (3726)


Contents: characteristics of forestry activities; trends in forest operations and techniques; statistical data on occupational accidents and diseases (frequency, severity, fatalities); analysis of occupational accidents (part of body injured, nature of injury, age, time of accident, payment system, dangerous operations, accident costs); analysis of occupational diseases and occupational health (noise, vibration, physical workload and nutrition, mental workload, climatic factors, exhaust emissions, occupational dermatoses); prevention of occupational accidents and diseases (technical standards on safety of equipment and machines; personal protective equipment; work clothing, weather protection; safety training of workers, safety organisation, occupational health services, research). Statistical tables. Suggested points for discussion at the meeting (Geneva, 1-10 Dec. 1981.). (50851)


Contents of this statistical report: definition of notifiable accidents (including acute poisoning cases), notification, record-keeping and analysis of accidents (reproduction of accident declaration form); proportion of accidents declared; statistical trends 1977-78; description of accidents due to bursting of flexible tubing under pressure, circular saws, and tractors; breakdown of fatal accidents by age group and industry; breakdown of accidents by district, industry, accident agency, type of accident, site of injury, type of activity. (53861)

Contents of this training manual: OSH legislation and standardisation; organisation and responsibilities; inspection authorities; premises and conditions of work; work equipment and protective devices; approval; examples of hazardous equipment and safety engineering (dust control; printing and binding machines; circular saws; fabric cutting machines; agricultural machinery; protection against falls from heights); industrial accidents - classification and data processing for statistics; economic aspects; OSH activities; electrical safety; lighting; noise control; organic solvents and acids; fire prevention; logging; protective clothing.


Catalogue listing 81 films on general or specific subjects and topics in the field of OSH (e.g. responsibility in case of accidents, OSH in works canteens, housekeeping, hazards of falling, respirators, scaffolding, noise control, ladders, live work, pesticides, explosive-actuated tools, woodworking). Each title is followed by an abstract of the film, indicating producer/distributor, film dimension, running time, type of sound track, colour or black-and-white.


Basic information is given for production safety. The main hazard spots and production processes common to different industrial sectors are dealt with. Hazards are described, with the safety measures that can be incorporated into equipment design and measures to prevent accidents during use of dangerous equipment. Contents: general remarks and terminology; safety analysis with check lists, hand tools, manufacturing techniques (moulding, forming, machining, welding and cutting, sawing, blasting, lasers); processing techniques, energy technology, in-plant transport (traffic ways, industrial trucks, lifting equipment and tackle, conveyors); storage; maintenance; offices. A general check list for safety analysis of a workplace is appended.

CIS 79-2093 Safety information profiles. DHew (NIOSH), National Institute for Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, Ohio 45226, USA, April 1979, 24 Vols. each 50-60p. 636 ref. (In English)

Each of the 24 profiles contains: standard industrial classifications included, process descriptions, potential hazards, existing hazard controls, accident and illness statistics, exposure levels, related studies, industry trends, existing standards, names of industry associations and other interested parties, names and addresses of companies, summary analysis of data, references and sources. The industries are: aircraft ground support-equipment operation, building equipment, building construction, building materials; chain saws in logging; compressed gas cylinder charging and handling; food and similar products; furnace operations - non-ferrous metals; glass bottle manufacturing; non-highway heavy construction, concrete and masonry; liquid transfer of petroleum products; manual handling of containers; mobile earthmoving equipment, non-mining; electricity, radiation, mining, metalworking, construction and wood, fine engineering, optics, textiles, leather, paper and printing, transport, communications, agriculture and forestry, food, commerce, service industries. Chapter 7 covers questions of training and continued education. Chapter 8 presents the national and union-based bodies, scientific institutions and organisations concerned with occupational health and safety in the German Democratic Republic (For Vol.1, see CIS 77-1765).

CIS 77-1848 Silos for wood chips (Silos a copeaux de bois). Rüegg W. Cahiers suisses de la sécurité du travail, Luzern, Switzerland, May-Sep, 1977, No. 126. 40p. Illus. (In French, German, Italian)

Most silo accidents are due to the formation of compact blockages preventing the flow of material. The shape of silos also tends to promote arching and the formation of steep walls of chips and sawdust. Description of some accidents and their causes. Various methods for limiting the hazards are suggested: influence of silo design, extraction of chips and sawdust (with hand tools, or mechanical), Rules for silo design and for safe work.

2. OCCUPATIONAL SAFETY RELATED TO TOOLS AND MACHINES

2.1. Hand tools


Following a general introduction, a number of simple safety precautions are given concerning the storage, maintenance and use of chisels and gouges, screwdrivers, saws, hammers and mallets.

2.2. Chain-saws

Aspects covered in this illustrated manual: the logging work environment; road and landing development; falling, limbning and topping; limbing and topping with a chain-saw; mechanical falling; chokermen; loading; short-logging; accident reporting.


Aspects covered in this illustrated booklet: chain saw safety devices; working with the chain saw; basic rules for falling trees; maintenance and repairs; reporting of accidents.

CIS 85-1095 The cutting edge - Chainsaw safety handbook: practical methods and procedures for safe power saw operation. Forest Products Accident Prevention Association, P.O. Box 270, North Bay, Ontario, Canada P1B 8H2, no date. 128p. Illus. (In English)

Contents of this manual on the safe use of chainsaws in the logging industry: preparation of equipment; basic work techniques; cutting site preparations; felling techniques and felling problem trees; delimbing techniques; basic bucking and measurement techniques; winter hazards; maintenance; fire aid.


Contents of this data sheet: generalities (classification of saw chains according to type of drive and use, legal restrictions); technical and safety requirements (hazards of vibration and noise, safety saw chains, check brake, hand guard, throttle lockout, chain catcher, heated handles, guidebar length, design features, warning notice); personal protective equipment (safety helmet, ear muffs, eye protectors, gloves, footwear, protective clothing); preventive maintenance; correct use of chain saws (training of workers, preparation of petrol-engine-driven saws, felling of trees, topping, cutting into lengths); general safety rules and precautions; legal provisions.


This guidebook intended for forestry workers covers protective equipment and clothing, chain saws, mobile equipment, correct logging procedures, woods road, first aid.


The sources of accidents or injury which can occur in connection with the use of chain saws by firefighters, some safety tips for chain saw use, and a series of case histories of accidents resulting from improper use are presented.


This article surveys: causes of accidents; precautions to be taken when using chain saws; purchase of a chain saw; personal protective equipment.


Subjects covered by this instructive manual for loggers: statistical aspects of vibration disease and chain-saw accidents in Yugoslavia; properties of trees; use of chain saws; preparation of felling sites and work organisation; choice, preparation, correct handling and carrying of chain saws; preparatory cuts at foot of tree; determination of falling direction; influence of the type of cut on the loggers' safety; final cuts and safety; hazards of falling inclined trees; tree falling on slopes; hazards of cutting hung up trees; tree lopping; cutting trunks into lengths; kickback and other hazards of chain saws. The main chapters are illustrated by examples of good and bad working methods and by descriptions of typical accidents.


This brief, illustrated guide provides information on the safe operation of chain saws, including how to avoid kickback accidents, electric shock, burns and fire.


Description of protective clothing which will rapidly (in 0.06-0.14s) jam the chain of a chain saw with which it is brought into contact. Comprises a coat and trousers. Areas likely to accidental contact with the saw (arms, legs and trunk) are quilted with layers of fabric made from synthetic fibre with good mechanical properties, in particular high tensile strength. Tests by the French National Research and Safety Institute have demonstrated the clothing's effectiveness. English translation may be obtained from the Canadian Centre for Occupational Health and Safety, 250 Main Street East, Hamilton, Ontario, Canada, L8N 1H6.


This article sponsored by the United Kingdom Agricultural Training Board gives practical rules for safe starting up, maintenance, lubrication, adjustment and cleaning of chain saws. Other aspects considered include: avoidance of kickback, chain-brake device, proper cutting methods in logging, non-slip footwear, gloves, vibration hazards.


The growing use of chain saws in sawmills, at construction sites and even at leisure workshops has affected the main causes of accidents (kickback, chain breakage, etc.). Mechanical hazards and their prevention are dealt with first: kickback and its prevention by the use of safety chains or equipping the saw with an anti-kickback device which is sufficiently high in respect to the handle; chain protection; correct starting; blocking device for the accelerator lever. Other subjects dealt with are: health hazards of vibration, noise and exhaust gases; correct operation; condition of cutting chain; automatic clutch for idling; fire risks; wearing of safety helmet, ear and eye protection, etc.


This code of practice was prepared in collaboration with an ad hoc international group of experts established by the FAO/ECE/ILO Joint Committee on Forest Working Techniques and Training of Forest Workers. It embodies the knowledge and experience of many countries. Although couched in the language of a set of rules, it has no binding force but is intended to give practical advice to all persons who have a responsibility for safety or health as affected by the design or use of chain saws, or who may be framing provisions on the subject. Contents: scope; definitions; manufacturing requirements (section on each part of the saw; weight, noise, exhaust fumes, vibration isolation; operating instructions); preventive maintenance; employers’ and operators’ duties and responsibilities. Appendices: tabulated and illustrated data on handle strength and clearances; noise, vibration; etc.

CIS 77-1701 Chain saws... Data Sheet - Occupational Safety and Health No.C-1, Canada Safety Council, 1765 St. Laurent Boulevard, Ottawa, Ontario, K1G 3V4 Canada, 1977. 20p. Illus. 14 ref. (In (In English))

Types of saw; statutory requirements; hazards (fires and explosions; electric shock; burns from cylinder head; lacerations and bruises; vibration syndrome; exhaust fumes in confined spaces; falling timber); precautions (safe working methods; kickback precautions; storage; transport; chain brakes (stopping within 0.15 second); noise levels and hearing protection; recommended noise exposure levels (table); maintenance; personal protective equipment); operating (cutting site preparation; fuelling; starting; cutting). Figures show tree felling methods, safe distances, etc.

CIS 77-1421 Chain saws... Data Sheet - Occupational Safety and Health No.1, Canada Safety Council, 1765 St. Laurent Boulevard, Ottawa, Ontario, K1G 3V4 Canada, 1977. 15p. Illus. 14 ref. (In (In English))

Types of saw; statutory requirements; hazards (fires and explosions; electric shock; burns from cylinder head; lacerations and bruises; vibration syndrome; exhaust fumes in confined spaces; falling timber); precautions (safe working methods; kickback precautions; storage; transport; chain brakes (stopping within 0.15 second); noise levels and hearing protection; recommended noise exposure levels (table); maintenance; personal protective equipment); operating (cutting site preparation; fuelling; starting; cutting). Figures show tree felling methods, safe distances, etc.

CIS 77-2439 Chain saws... Data Sheet - Occupational Safety and Health No.2, Canada Safety Council, 1765 St. Laurent Boulevard, Ottawa, Ontario, K1G 3V4 Canada, 1977. 15p. Illus. 14 ref. (In (In English))

Types of saw; statutory requirements; hazards (fires and explosions; electric shock; burns from cylinder head; lacerations and bruises; vibration syndrome; exhaust fumes in confined spaces; falling timber); precautions (safe working methods; kickback precautions; storage; transport; chain brakes (stopping within 0.15 second); noise levels and hearing protection; recommended noise exposure levels (table); maintenance; personal protective equipment); operating (cutting site preparation; fuelling; starting; cutting). Figures show tree felling methods, safe distances, etc.

2.3. Other saws


This technical safety data sheet, which is intended for managers, engineers and supervisors, outlines the hazards associated with the use of table circular saws and panel saws and discusses the various means of prevention. Contents: introduction to the main types of machines concerned;
function, description and characteristics of each model; French regulations; obligations of manufacturers and users; installation; protection (power and movement transmission, blade, workplace, stability, electrical circuitry, noise level); advice: workplace layout, sawing, blade replacement, maintenance. [84143]

CIS 87-326 Electric hand saws, circular blade type. NSC Data sheet i-765-77, National Safety Council, 444 North Michigan Ave., Chicago, IL 60611, USA, 1986. 6p. Illus. 3 ref. (In English)
Covered in this data sheet are: electrical hazards and precautions, maintenance and operating rules. [47405]

Report on the safe use of wood shingle making machines. Aspects covered: general process; identification of hazards; training of workers; improvement of safety with safer working methods; accident statistics. [44109]

Aspects covered in this safety manual: the electric circular handsaw and its uses; safety features; precautions with electrical and mechanical parts; choosing the proper blade; changing, adjusting and setting blades; cutting; protective clothing and equipment. [43125]

CIS 84-1745 Safety of bandsaws in the food industry. Guidance Note PM 33, Health and Safety Executive, Health and Safety Executive Sales Point, St. Hugh’s House, Stanley Precinct, Bootle, Merseyside L20 3QY, United Kingdom, July 1983. 4p. Illus. 3 ref. Price: £0.50. ISBN 0-11-883564-5 (In English)
This guidance note covers: safety devices to be used with bandsaws (guards, controls, etc.); installation of these machines; supervision; training; recommended instructions to the operator. [42719]

This data sheet covers electrical hazards and precautions, maintenance and operating rules for circular blade-type electric hand saws. [42089]

CIS 84-315 How to use safely the circular saw (Como operar com segurança a serra circular). Ministry of Labour (Brazil), (Ministério do Trabalho), Fundacao Osiris, Al. Barão de Limeira, 535, CEP 01092, São Paulo, Brazil, 1980. 16p. Illus. (In Portuguese)
This manual describes the accident risks associated with circular saws, and recommends preventive measures during installation (location of the saw, electric connections, lighting levels) and during operation (positioning of material to be cut, training, protective equipment). The appendix includes exposure limits to noise during the operation of circular saws, ranging from 85dB(A) during 8h to 115dB(A) for 7min, and the description of an electromechanical protective apparatus for circular saws, developed in Brazil. [41350]

A relatively simple guard consisting of a number of tubular segments arranged round the bare portion of the saw blade is described. The segments have stepped diameters and constitute an extendible telescope guard. The large-diameter top segment is fastened to the pulley fairing, and the small-diameter bottom segment rests on the blade guide. The extendibility of the guard protects the bare portion of the saw blade against inadvertent contact. [39304]

Review of methods for preparing fire wood; hazards of circular saws, wood huggers, and log-splitting machines; recommendations for machine design and machine guarding, work clothes and safe working methods, especially regarding log-splitting machines. [38848]

CIS 82-920 Circular electric handsaws. CSC Data Sheet C-2, Canada Safety Council, 1765 St. Laurent Blvd., Ottawa, Ontario, K1G 3V4, Canada, 1981. 8p. 4 ref. (In English)
Contents: hazards; preventive measures (rules for safe operation, electrical hazards, maintenance, work area, personal protective equipment); training; first aid; references; 2-page summary for poster display. [37704]

Analysis of the material factors in accidents on bench-mounted circular saws used in the building and construction industry and of the risk conditions indicates that little has been achieved in the prevention of such accidents. The main causes are: shortage of skilled workers, lack of safety training and instruction, and misappraisal of the dangers, since the building site circular saw is considered only as an accessory. Rapid overview of the advantages and disadvantages of the most common types of guard. Since the safety devices currently in use are not considered adequate, it is recommended that a new design of machine be produced. [36495]

Report on job studies conducted on a band-saw line and a circular-saw line: description of the lines, work organisation, tasks and working environment (workplace layout, work postures, conditions of visual and hearing noise, microclimate and ventilation). It appears that automation of sawmills is associated with a loss in job content, more stress and isolation, but that these drawbacks are more than compensated by a better physical environment (work indoor, cabin protecting against noise and dust). [36000]

These rules, which are intended for manufacturers, summarise the main provisions of the safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the design, construction and equipment (including accessories) of this type of saw: specifications concerning marking; guards to prevent contact with the tool; guiding of workpiece; controls; brakes; removal of sawdust by local exhaust; instructions for use. Appendeed: list of pertinent regulations and directives. [35424]

This data sheet does not apply to circular saws at building sites or portable saws. Contents: hazards; safety by design (general remarks, electrical equipment, riving knife and its mounting, slot in table, under-table guard, adjustable protective hoods, intermediate fence, special measures for dust and noise); safety in use (general remarks, saw blades, riving knife, guards, guides and push-sticks; safety rules for different tasks); noise control; applicable Dutch regulations. [34140]

CIS 79-2053 The radial saw.. Data Sheet 1-353-78, Revised 1978, National Safety Council, 444 North Michigan Avenue, Chicago, Illinois 60611, USA, 1978. 6p. Illus. 8 ref. (In English)
This data sheet gives information on hazards (kickbacks, wrong-way feeding, improper accessories, loose clothing, flying particles, etc.) and precautions (properly trained personnel, installation and location of equipment, etc.) - especially machine guards (hood type guards for single-arm and double-arm radial saws are illustrated), spradders (riving knives) and antikickback devices. Other sections are devoted to: workplace conditions (nonslip flooring); basic saw operations (cross-cutting, ripping, etc.); regulations for shaping, jointing, sanding, planing) and safety instructions for operators. [32168]

CIS 79-662 Veneer slicing machines (Trancheuses - Machines à trancher le bois.. Toebelm W. Fiche technique de sécurité No.20, Institut national de recherche et de sécurité, 30 rue Olivier-Noyer, 75680 Paris

Review of the provisions of the new West German safety regulation VBG 7 concerning the blade guard and riving knife. Circular saws with a diameter of more than 250mm must be provided with a separate adjustable blade guard and a riving knife fixed to a positive guide. The control elements of the machine must be located away from the danger zone. Other provisions concern guarding the blade under the table and the adjustable guide. Illustrated comparison of the various cuts on machines with a blade diameter of less than 250mm, equipped with a combined guard and riving knife, and machines with larger diameter equipped with a separate riving knife and an adjustable blade guard.


This guard was devised as the result of an accident due to a circular saw used to cut electric insulators and extended plastic bars. It consists of a hood fixed to the saw bench and a shield which slides inside the hood. When the stock is inserted it presses the shield back against a spring, which ejects the shield into its former guard position as soon as the stock is sawn through. The outer edge of the telescopic guard may be adapted to fit the shape of the stock.


This technical safety data sheet, which is intended for managers, engineers and supervisors, outlines the hazards associated with the use of surface planing machines and discusses the various means of preventing accidents. Contents: function; description; main characteristics; French regulations; obligations of manufacturers, retailers, rental agents, importers and users; installation; protection (power and movement transmission, cutter block, electrical circuitry, workplace stability, noise level); advice on surface planing operations, replacing knives, maintenance.


Contents of this data sheet: identification of hazards and list of safeguards to prevent accidents; maintenance of cutting blades; protection against noise; illumination.


This safety data sheet covers safety measures to be taken when using a hand fed surface planer. Sections cover: review of French regulations; use of the machine; main hazards and their causes; prevention of injury hazards (adjustments prior to use, safety devices, planing a side face, planing of edges, etc.); advising against the hazard of noise induced hearing loss (noise sources, noise reduction at source, personal protective equipment);...

The hazards and preventive measures for the main operations with these machines in joinery and carpentry workshops are reviewed: hazards for the hands, kickback of the workpiece during setting of the cutter block, use of workpiece guides and freehand work; risk of injury by ejection or breakage of cutters.


Description of a simple attachment devised by the French National Research and Safety Institute (INRS), which can be easily made by any joiner, comprising a bench vice fixed to the right-hand edge of the spindle moulder table, with a T-slot for guiding the anti-kickback stop block which is held in place by a locking handle. This device improves considerably the stability of workpieces whose length exceeds that of the machine table. The block can be lifted out of place easily, especially if it is made for rapid swivelling sideways.


This workpiece guide, which is quite inexpensive to make, can be used on spindle moulders to enable pieces to be notched without hazard to the operator. This leaflet explains how the guide is constructed, with detailed drawings and photographs.


The characteristics of cutters may be affected by errors in grinding them. This data sheet describes the role of the grinding tool and makes recommendations on the choice of grinding wheels, how to perform grinding operations (cleaning of cutters, checking the concentricity of cutters before sharpening, respecting the cutting edge geometry, grinding operation) and on conditions of work in the tool grinding shop, concluding with 12 essential and practical rules for safe work.

2.6. Other woodworking machinery


This technical safety data sheet, intended for managers, engineers and supervisors, outlines the risks to which the operators of these machines are exposed and discusses preventive measures. Aspects covered: function, description, main characteristics; French regulations: obligations of manufacturers, retailers, agents, importers and users; installation; protection (dead part, live part of the chain, electrical circuitry, noise (level)); advice on use; safety and maintenance.


This data sheet, intended for managerial staff, engineers and supervisors, examines the hazards associated with straight-edge guillotines used to cut paper, cardboard, plastic sheets, veneer wood and some specific metal sheets. General introduction: description, main characteristics, operating principles; regulations (official directives applicable in France, standards); installation; operation; risk prevention; maintenance and checking. Data concerning risk analysis and means of preventing hazards are presented in table form and numerous technical drawings illustrate devices which can be used to improve the safety of older models.


Contents of this data sheet: definitions; hazards (contact with the rotating tool, kick-back, bursting or loosening of tool, getting entangled between the workpiece and feed rollers, electricity, noise); construction (general safety, electrical equipment, spacing collars, fenses, guards, table opening, braking system, locking of sliding table, cutter Arbor); safety devices authorized in the Netherlands; safe use (minimum air, dust exhaust system, lighting, operating and maintenance instructions, operator's qualifications, cutters and speeds of rotation, tool setting, work clamping and posture, elimination of wood residues); noise control; extracts from the relevant Dutch regulations.


Revised and updated version of CIS 79-682. Summary: description (horizontal, oblique, vertical, rotating slicers), operation, main characteristics; regulations and directives (obligations of those who manufacture, sell, lease, import or use these machines in France), standards; choice, installation, use, guarding, maintenance and inspection of machines. A table presents an analysis of the hazards involved and appropriate protective measures.

CIS 86-555 Guillotine cutters. NSC Data Sheet i-697-85, National Safety Council, 444 North Michigan Ave., Chicago, IL 60611, USA, 1985. 8p. Illus. 1 ref. (in English)

Aspects covered in this data sheet: description of the various cutters and their safety systems; hazards (hand injuries from knives and clamps); safe operating procedures; maintenance and repair.


Recommendations concerning the following machines: circular saws; band saws; band saws for logs; spindle moulders; surface planers; planing machines; moulders; tenoning machines; chain mortisers; chain saws; sandwich machines; paper guillotines and trimmers; circular-knife cutting machines. A table summarizes the risks and preventive measures associated with each machine.

CIS 88-331 Coated abrasives. NSC Data Sheet i-452-85, National Safety Council, 444 North Michigan Ave., Chicago, IL 60611, USA, 1985. 5p. Illus. (in English)

Aspects covered in this data sheet: hazards (dusts and vapours, flying particles, contact with the body, fire and explosion, general machinery hazards); guards for disc, belt and drum sanders.


Preventive measures include: equipment as prescribed by French legislation; personnel (training in the workplace, posture); work organisation (material feed, machine cleaning, tidying); maintenance and the environment. Improvements in working conditions apply to machine loading, die handling; workstation planning (platform, lighting).


Catalogue of films on accident prevention in the construction industry. Subjects: scaffolding; work in pressurised atmospheres; cranes; manual
handling; circular saws; spindle moulders; chain mortise machines; tenoners; surface planers; thicknessers; slips and falls; falls from heights; electrical hazards. (44307)


This data sheet identifies the hazards from each step of the paper-making process (wet end, handling felts, dryers, calender stacks, reels, winders). (44307)


This illustrated booklet provides workers with guidelines for the safe use of portable electrical tools used on construction sites. (43139)


The use of the following safety devices is discussed: protective glasses when arc welding and a semi-transparent plastic curtain to protect observers of welding operations; portable-air powered grinders which are rendered inoperative when the protective wheel guard is removed; a chain brake and hand guard as standard equipment on chain saws. (40208)


A study of 200 cases of occupational hazards in 2 years revealed that 43% occurred in manufacturing industries, 24.5% in the construction industry, 7% among farmers, 5.5% among marine workers and 5.5% in the transportation industry. 38 cases were caused by electric saws, 24 by lathes and other machinery, and 12 by cultivators. These were the most frequent causes. Gloves did not provide efficient protection. An understanding of safe operation and improved safety devices are needed to decrease the incidence of these injuries. (41711)


A short note to enhance awareness of the hazards presented by woodworking machines. Bandsaws and spindle moulders are two especially dangerous pieces of equipment. Belgian regulations on the design and guarding of bandsaws and spindle moulders are presented. (40706)


Recommendations adopted 23 Feb. 1983. They cover all enterprises using such presses (including used and older equipment), except enterprises in the hides and leather industry. General regulations on the design and guarding of bandsaws and spindle moulders are presented. (40706)


Contents of this manual for woodworkers, cabinet makers and carpenters: basic principles of occupational safety and health in work with woodworking machines (rotating parts, controls, shavings, electrical safety, noise and vibration, lighting, personal protective equipment, working area, fire prevention and fire fighting); occupational safety in the use of specific machines (reciprocating, band and circular saws, handling equipment). A set of questions for assessing the safety knowledge of workers is appended. (40693)


Sections of this safety training manual for lumbermen and sawmillers deal with: power-driven hand tools (chain saws); felling and logging of trees, cutting trunks into lengths; log haulage (by sleigh, animal-drawn vehicles, tractor, loader, lorry); electrical safety; fire protection; chain-saw noise and vibration; stress factors; poor working conditions; snake, insect, and other animal bites; drowning hazards during timber floating. Questions to check the knowledge acquired by workers are appended. (40664)


Illustrated brochure designed to give worksite and workshop management the wherewithal for the safety training of their workers. Review of machining hazards relating to the characteristics of the material being machined, tool cutting action, and work procedures, and relevant safety measures. Sections are devoted to the following aspects: workshop design, equipment and layout; mechanical handling in the workshop; light and colour in the workshop; noise; air quality; dust; sawdust and chips; electrical installations; hydraulic and pneumatic equipment; accident prevention in machine operation and maintenance; operator education and training. The main relevant French legislation is referred to. (38238)


Illustrated brochure designed to allow educators and trainers to build safety into their courses. Description of the specific hazards of the most common woodworking machines: bench-mounted band saws, bench-mounted circular saws, pneumatically operated cross-cutting saws, radial saws, over-hand planers, vertical spindle moulders, chain mortisers, combination woodworking machines. Review of the main relevant French legislation. Appendix: table showing the peripheral speeds of cutting tools as a function of tool diameter and spindle revolutions per minute; also indicated in the table are optimal cutting speeds and speeds above which tools may be subject to bursting. (38238)

2.7. Maintenance


This guidance publication covers: legal requirements in the United Kingdom; housekeeping, interim storage and layout; mechanical handling equipment; lorries and trailers; storage; manual handling and lifting. (44083)


Aids for the field of materials handling are discussed. Applications relate to drop forging, foundries, machines and presses, shops, plastics injection moulding, welding, textile processing, woodworking and wood processing, systems for and development of industrial robots, manipulators, gripping devices and peripherals are discussed. Specific applications are presented, and their effects on humanisation of work, economic aspects and reliability are examined. The use of manipulators in handling of starter batteries and incessant cascings and in unloading of spinning machines is reported, and new applications and social implications are discussed. (42485)


This recommendation was adopted on 14 June 1979. Methods of handling reels in the papermaking industry are reviewed, and the hazards listed with the corresponding safety measures: use of handling equipment, storage methods, operator protection, training and information. (34209)
3. OCCUPATIONAL HEALTH

3.1. Noise and vibration


Eighteen papers on various aspects of noise and vibration in the use of agricultural and forestry machinery (mostly tractors and chain saws).


The association between hearing loss and vibration-induced white finger (VWF) was examined among 499 workers. In the age groups 40-49, 50-59, 60-69 years with 5-9 years of exposure, the chain-saw workers with VWF had a significantly greater hearing loss at higher frequencies than those without VWF. However, in the 10-14 year exposure groups, a significant difference was not found between the VWF and non-VWF groups, except that the 50-59 year age groups showed a significant difference in mean age. Interindividual differences in susceptibility to noise and vibration may be responsible for the synergistic effect of noise and vibration.


This study was designed to determine whether a combination of noise and vibration produces more pronounced changes in temporary shifts of finger skin temperature and temporary threshold shift (TTS) of hearing than those resulting from exposure to either stress alone. Nineteen healthy subjects were exposed to 6 different combinations of vibration, noise and handle holding by using a chain saw for a pre-determined time. The mean value of normalised finger skin temperature decreased much more when the subjects operated a chain saw at high speed than when they operated the chain saw with the noise isolated by double hearing protection. Noise may play a part in inducing the constriction of peripheral vessels seen with local exposure to vibration, and hand-arm vibration may produce an additive effect on the noise-induced TTS.


The pattern of work and rest in a group of 7 forestry workers engaged in salvage cutting was observed during 7 full day shifts. The workers were exposed to noise and vibration for 43-45% of their working hours. They worked 812% more than exposure in selective cutting in comparable growths. During salvage cutting the maximum permissible noise level was exceeded, as were the levels of vibration transmitted to the hands. Mean working heart rate was generally higher than in selective cutting. However, although the physical strain in salvage cutting is high, the upper limit of medium heavy work, 6.3MJ/shift, is not exceeded.
Lamminpää R. Tutkimuskia 173, Työterveyslaitos, Julkaisutoimisto,
A matched-pair case-control study was done to eliminate the confounding
effects of age and duration of noise exposure, in 543 forestry workers using
chain saws, bush cleaners, or winches. Results of audiographic (hearing
threshold) measurements showed that an association between vibration
effects of age and duration of noise exposure, in 543 forestry workers using
CIS 82-1244 Portable machines (Machines portatives). Manuel
Illustrated brochure designed to give worksite and workshop management
the wherewithal for the safety training of their workers. A review is given of the
guidelines for eliminating the main risks to which portable power tool
operators and nearby workers are exposed. Analysis of the safety measures
in the use of electrical, hydraulic, pneumatic and thermal power sources,
powered tools (chisels, drills, grinding tools, bolt extractors, drill and nut
runners, drills, grinding machines); percussion machines (bolt guns,
pneumatic drills, staplers and nailers). Reduction of noise levels produced by machines.
The main relevant French legislation is referred to.

CIS 82-626 Accidents involving guillotine-type cutters and their prevention (Gilletinieliukkuiden tapaturmat ja niiden torjunta). Lahtela J.,
Lamminpää R. Tuttikuska 173, Työtettävylaitos, Julkaisutoimisto.
Report of a study to determine the number of accidents on guillotine-type
cutters, their direct and indirect causes and suitable preventive measures.
The study was based on Finnish official statistics for 1979 covering 219
guillotine accidents resulting in absence from work of over 3 days; this was
followed by on-site analysis of the accidents. Two-thirds of the accidents
took place during cutting and a quarter during materials handling.
Paper cutters caused 30 accidents, roller splitters 15 and veneer cutters 19. The
number of materials-handling accidents could be reduced by the use of
personal protective equipment and handling aids; accidents during cutting
could be prevented by build-in safety devices which had been installed on
only a few cutters. The majority of the accidents were caused by clamps,
baffles or other moving parts and could have been prevented by technical
measures. Some safety guards provided only partial protection. In some
cases, safety could be improved by modified work methods.

CIS 82-525 Safety in the use of woodworking machines. Guidance
Note PM 21. Health and Safety Executive, HM Stationary Office. P. O. Box
ISBN 0-11-838308-4 (In English)
Introduction (accident statistics with woodworking machines); general re­
commendations: workroom lighting, heating (cold hands reduce ability to
control the workpiece), layout; fences; training. Cutters should be kept sharp
(less noise; blunt cutters chop at the workpiece, increasing the accident
risk), avoid tearing; guard all moving parts (guarding of bench-mounted saws, riving knives), cross-cutting machines.
Source of further information.

CIS 81-1432 Health and safety guide for manufacturers of wood­
working machinery... DHEW (NIOSH) Publication No.79-131, National
Institute for Occupational Safety and Health, 4676 Columbus Parkway,
Cincinnati, Ohio 45226, USA, Mar. 1979. 112p. Illus. (In English)
Illustrated by humorous drawings and instructive sketches, this booklet aims to assist in providing a safe and healthy workplace by describing safe
practices and encouraging compliance with the U.S. health and safety
regulations. Chief contents: health and safety guidelines (programmes;
philosophy for health and safety compliance; employee training; job safety analysis); health hazard control techniques; frequently violated regulations
(walking and working surfaces; standard guardrails and toeboards; fixed
industrial stairs; ladders; exits; machine guarding and processes requiring
guards; hand and portable power tools; compressed air use; hazardous
materials and operations; fire protection); materials handling and storage
powered industrial trucks); National Electrical Code; occupational health
and environmental control; personal protective equipment; welding, cutting
and brazing; sanitation; medical and first aid; record keeping; checklist:
information sources.

CIS 81-1232 Veneer peeling lathes (Décolleuses). Tobelem W. French
National Research Council, Ottawa (In French et éducation et sécurité), Cahiers de notes documentaires - Sécurité et hygiène du travail,
1st quarter 1981, No.102, Note No.1298-102-81, p.3-20. Illus. 8 ref. (In French)
Intended for management and supervisory staff, this information sheet gives
advice on the hazards of working with this equipment, and corresponding
safety measures. Descriptive data, references to French legislation, advice
on purchasing, installing and operating this equipment for making veneers
and packaging materials. Review of safety measures and guards for manu­
ally fed and automatic machines (synoptic table). Advice on maintenance
and periodic checking of this equipment.

CIS 81-637 Cost of woodworking machine accidents and safety
techniques (Le coût des accidents et sécurité des machines à bois...). Duteil
Statistics concerning woodworking machine accidents (1977 frequency rate in
France: 11) and their cost; analysis of these accidents in relation to type of
wood and its properties; some safety principles applicable to: circular
saws, planing machines, spindle moulders. Emphasis is laid on operators'
skills and training. Brief review of pertinent French legislation.

CIS 81-43 Nail-pulling hammers - Design and use (Les marteaux
arrache-clous - Conception et utilisation). Rambour H. Travail et sécurité,
Advice on the design and use of different types of hammer head for pulling out embedded nails, with reference to special types of hammer for carpentry,
building construction, crating and other jobs, and ordinary household ham­
mers.

CIS 81-33 Manual-feed woodworking machines (Les machines à
bois à aménage manuel). Rambeau D. Revue de la sécurité, May 1980,
Contents: statistical data on accidents with these machines in France;
pertinent French legislation and commentary; table showing the causality
leading to an accident with one of these machines; major hazards of these
injuries and amputation of the hand) and safety engineering measures;
guarding devices for circular saws, surface planers and spindle
moulders; kickback of piece; bursting tools; electrical hazards; noise; OSH
training.

CIS 80-1273 Noise of metal- and woodworking machines - Results of
measurements (Buller från metall- och träbearbetningsmaskiner - Mät-
resultat). Jung B., Jonasson H. SP-RAPP 1979-21, Statens provns­
169p. Illus. Price: Swe.cr.20.00. (In (In Swedish)
Noise emitted by 48 machines (milling machines, lathes, surface grinders,
boring machines, cut-off saws, drills; circular saws, surface planers, sanders,
routers) was measured under normal operating conditions. The measure­
ment reports give data on: technical specifications of each machine and
material worked, manner of machine installation, plan of measurement
points with distance from noise source, acoustic characteristics of the
premises, results (effective noise level, sound pressure at the operating
station for different frequency bands).

CIS 79-843 Woodworking safety and you... South Australian Depart­
ment of Labour and Industry, Adelaide... South Australian Premier's Depart­
ment, Publicity and Design Services, 55 Waymouth Street, Adelaide, South
Australia, Australia, May 1978. 17p. Illus. Gratis. (In (In English)
This well illustrated booklet covers most safety aspects of work with wood­
working and woodworking machines (particularly fixed machines, but with some comments
on portable electric tools and hand tools). The main sections deal with
circular rip saws, docking saws, radial and band saws, buzzet surface
Aspects covered include general workshop and machine safety, setting-up, planers and joiners, vertical spindle moulders, thicknessers, tenoning and hand protection. (31301) Checking blades and knives, securing stock, repairs and maintenance, eye protection, multiple-drum sanders, routers, off-hand turning lathes and pedestal drills. (20320)


This study of the operation and repair of these machines is based on a literature review, interviews and process examination in a paper factory. Guidelines for safe working methods are given and special rules for some machines; present rules are insufficient. Special emphasis is laid on machine guarding and the preventive maintenance and proper repair of safety devices. Prevention of inadvertent starting of machines is still an important problem. (30091)


Intended for managers and supervisory staff, this data sheet briefly examines the hazards of operating these machines, and the relevant preventive measures. Description, operation, main data and approval; relevant regulations and standards; requirements for the constructor; installation; guarding (safety screen to prevent contact with the chain and to protect against flying fragments); use; maintenance and testing. The hazards (finger, hand, arm injury; ejection of the workpiece; eye injury; hearing loss; electric shock) are listed with their causes and preventive measures. (29686)

CIS 78-1158 Power feed wood planers.. Data Sheet 225, Revision A (Extensive), National Safety Council, 444 North Michigan Avenue, Chicago, Illinois 60611, USA, 1977. 4p. Illus. 10 ref. (In English)

Description of types of planers; hazards (cutting edges, high speed of operation; bodily contact with moving parts; being caught between the work and a part of the machine; flying materials; injuries due to materials handling; hearing loss); precautionary measures (operation of these machines by experienced workers only, or supervision of inexperienced workers; safe distances; height of work table; anti-vibration mounting; guarding of moving parts and motor couplings; no wearing of gloves, rings or loose clothing; balancing of knives; hearing protection, etc.). (29548)


Instructions, illustrated by photographs, for setting (centering, fixing) and precise adjustment of cutting blades in a 4-sided tool-holder revolving at high speeds. (29308)


The French National Research and Safety Institute publishes regularly, in its "Cahiers de notes documentaires", technical data sheets on safety aspects of various machines (saws, surface planers, spindle moulders, lathes, grinding mills, milling machines, etc.). This general annex lists the French laws, regulations and other statutory instruments, and the recommendations and standards concerning these machines applicable in France. The list is followed by technical considerations (workplace layout and location of these machines; ergonomic workplace design; use of cutting fluids; electric, hydraulic and pneumatic equipment; sweep guards and guarding devices operating by electrical contact; stop buttons and emergency stop devices; maintenance; periodic checks). (29039)


The machinery described in this handbook is of Soviet manufacture, but most of the information on its safe use is of general interest. Equipment covered: graders, compaction equipment, spreader-finishers, portable compressors, piping-crane, loaders, vehicles with elevating platform or aerial basket, jack-leg drills, bulk concrete and asphalt transporters, hanging scafolds, plaster guns and smoothers, concrete guns, floor grinders, paint grinding mills and vibrating screens, spray painting units, parquet planning and sanding machines, etc.; portable electric tools; electrical safety; maintenance and repair. (28343)


Description of an adjustable guard that is fixed to the table or stand of any type of router, including portable routers fixed upside-down on the work­bench. The body of the guard surrounding the tool is provided with an exhaust aperture designed to be connected to a central exhaust fan. The height of the guard with respect to the workpiece is adjusted at the same time as the routing depth. The lower edge of the guard has a thrust ring mounted on the arm with 2 springs which permit its pressure on the workpiece to be adjusted. The guard is joined to the cutter by a small chain, so that it lifts at the same time as the cutter to free the workpiece. (28457)

CIS 87-1484 Noise reduction at buckie folding machines. Health and Safety Executive, St. Hugh's House, Stanley Precinct, Trinity Road, Bootle, Merseyside L20 3QY, United Kingdom, 1986. 5p. Illus. Appendices. Bbl. Price: £2.50. ISBN 0-11-883849-0 (In English)

This guide contains measures which can be used on new machines as well as on machines already in service. Covered are: noise levels at the machines; noise reduction at new machines; noise reduction for other machines (general principles, noise hoods, practical design considerations, compres­ sor noise, full machine enclosure); legal requirements in the United Kingdom; availability of noise hoods for the machines; bibliography. (44681)


Part I describes methods for recording and analysing low-frequency noise and pure tones in control rooms and cabins. A procedure for estimating infrasonic perception thresholds and changes in noise level is also given. Part II gives results for 87 control cabins in sawmills, pulp factories and iron- and steel-works. In one cab (a sheet-metal cab for a chip crusher) were Swedish limits for infrasonic and pure tones exceeded. In approximately one-fourth of the cabins, infrasound was perceptible. In 36% of the cabins, the infrasonic level was higher inside than outside. (44657)

CIS 86-643 Results of occupational research - Results of applied research - Noise control (Arbeitsschutzliche Erkenntnisse - Forschungsresultate - Störschallschutz). Bundesanstalt für Arbeitsschutz, Postach 170202, 4600 Dortmund 17, Federal Republic of Germany, 1985. 9 notes, 8-10p. each. Illus. Bbl. (In German)

Information notes issued as supplements to the series abstracted as CIS 84-1794. They contain the results of applied research on noise control in bottling plants, chutes, forging presses, truing machines, blanking presses, band saws and knock-out equipment. (45817)
These supplements describe technical measures for the reduction of noise. The cutting tool is the main source of noise in most cases when working with woodworking machines. This report describes plant measurement and gives examples of actual noise measurement. The main sources of the noise are identified. The influence of the characteristics of the cutting tool is studied as well as the possibility of reducing noise by appropriate design. In an appendix: list of cutting tools studied, with their characteristics and acoustic power (under normal working conditions or when running idle).


These supplements describe technical measures for the reduction of noise caused by axial fans in cooling towers, by the rolling and cutting of steel bars, by the grinding of blanking tools, by the changeover of an eccentric press operation to a single-stroke, by the use of double-end profilers, by vibrating conveyors, by typewriters, by bottling equipment not only made working conditions more safe and comfortable, but improved the ease of maintenance and repair of the equipment. (40143)


Practical approaches are described for the development and testing of hood-type acoustic enclosures acceptable for sawmilling practice: requirements to be met by frame-saw enclosures; noise levels around unshielded frame-saw; design needs and step-by-step development of an enclosure; noise measurement - techniques and results of airborne noise measurement with a view to containing airborne noise within the enclosure and to controlling it by a local exhaust system. Description and drawings of the prototype enclosure.

CIS 83-372 Noise measurement in accordance with German Standard DIN 45 635 during the testing of plant and equipment (Geräuschmessung nach DIN 45 635 bei der Prüfung technischer Arbeitsmittel), Maue J.H. BIA-Report Nr.2/82, Berufsgenossenschaftliches Institut für Arbeitssicherheit, Lindenstrasse 80, 5205 St. Augustin, Federal Republic of Germany, 1982. 85p. Illus. 6 ref. (In German)

Proceedings of a symposium on "problems of measuring sound power levels in plant and equipment" (29 April 1982, St. Augustin, Federal Republic of Germany). The papers, which are reproduced in extenso, deal with: work of the Occupational Safety Institute of the Mutual Industrial Accident Insurance Association in the field of noise measurement; new version of DIN 45 635 (multi-site measurement technique and measurement conditions); use of DIN 45 635 in the measurement of noise on large machine and plant; analysis of machine noise sources using the multi-site measurement technique; measurement of packaging machine noise - noise measurement problems and use of the collected data; measurement of printing press and converter machine noise; measurement of woodworking machine noise.

CIS 82-1878 Industrial noise control. AMCEE, 225 North Avenue, N.W., Atlanta, GA 30332, USA, 1982. Price: Part 1 US-$2,400 (8 video cassettes); Part 2 US-$300.00 per videocassette (4). (In English)

This 2-part videocassette safety training course is designed to enable safety directors to improve plant hearing conservation programmes. Part 1 covers the fundamentals of noise control and part 2 the application of hearing conservation principles to particular industries. Specific topics include: acoustic and vibration materials, enclosures and barriers; vibration control; air and noise mufflers; system and machine design; noise management; solutions to problems in the metal, wood and paper, food, chemical, petroleum, and plastics industries.


Data were collected for promoting the use of ear protectors in the paper industry, instructing workers in their use and for improving ear protector design. A questionnaire survey was carried out on 237 paper mill workers, 104 of whom had hearing loss. The frequency of hearing loss increased after 10-19 years noise exposure. The 47 workers who used earmuffs complained that these devices caused sweating (57%), pressure on the ears (34%), impaired speech communication (39%). Of the 172 workers using earplugs, 20-28% complained of the hygiene problems of dirty earplugs. The reasons given by 183 workers not wearing ear protection included: slight risk of hearing loss (44%); difficulty in hearing instructions (42%); perspiration (34%); forgetfulness (26%); protectors misplaced (25%). Improved instructions of workers and better selection of hearing protectors will improve compliance.


Description of the various stages in the process of reducing the noise level in the machine section of an industrial joinery works: noise level survey before implementation of noise-reduction measures, trials on noise reduction at source (on a four-sided planer, double tenoning machine, circular saw, total enclosure (description, assessment, improvement). The results are given in different forms (radiation diagrams, noise charts) and show the effects achieved by the use of special "low-noise-level" cutting tools and the effectiveness of a well-designed integral acoustic enclosure.

CIS 82-966 Noise generated by metalcutting machine tools (Geräuschemission spanender Werkzeugmaschinen). Weck W., Melder W., Brey W., Klöcker M., Wieseling W. Forschungsbericht Nr.264, Bun-
Engineering approaches to the control of noise associated with saws and planers, nailing machines, hogs and chippers, ventilation fans, and motors are described. Guidelines for reverberation analysis in work spaces and for the design of acoustical enclosures are also presented.


The 88 papers presented at this conference, sponsored by the Institute of Noise Control Engineering and the North Carolina State University, (Raleigh, North Carolina, USA, 8-10 June 1981), are reproduced under the topic headings: noise control regulations and benefits; noise source identification; barriers and enclosures; mufflers; hearing protection devices; textile and fibre industries; metal fabrication industry; transportation and aircraft; ambient noise press noise; woodworking industry; tobacco and packaging industries; community noise; applications of damping materials. Author and subject indexes are provided.

CIS 81-1572 Noise reduction in disc-shaped tools by increasing the loss factor (Geräuschminderung scheibenförmiger Werkzeuge über Verlustfaktorstiegerung). Scherger A. Maschinenmarkt, 1980, Vol.86, No.43, p.839-842, illus. 7 ref. (In German)

Physical principles of noise generation and propagation in disc-shaped tools and means of reducing this noise. Effective noise reduction for circular saw blades can be achieved only by using dampers with a surface effect. Means of increasing the loss factor: sandwich construction with intermediate layers of plastic, all-metal sandwich construction. The operation and advantages of the few systems are compared and the latter is better. Practical design and construction details. Assessment of noise reduction achievable (8-12dB(A)).


Texts of papers presented at the Congress of the Acoustical Society of Finland, Lahti, 1980, 7-11 June 1980, mostly in Swedish, some in English, under the broad headings: room and building acoustics, structure-borne sound (sound transmission from machines to foundation, resilient mounting, measurement methods, vibration isolation, ships), machinery noise (Nordic data bank for noise sources, sound level guarantee when purchasing machines, compact sound attenuators for machine enclosures, noise in heating plants), noise control in industry (centrifugal separators; woodworking machine enclosures; concrete element prefabrication; hearing status of ship platers, acoustic measurements and noise reduction methods in a ship-repair yard), occupational noise exposure (automobile repair and body shops, earthmoving equipment, tractors), impulse noise (measurement by numerical display, simulated ear, hearing damage study), chain-saw vibration test; exterior noise in industry; aircraft and traffic noise; electroacoustics; communication acoustics; acoustical education and information.

CIS 81-966 Noise control technology for selected woodworking machinery.. Hart F.D., Stewart J.S. Department of Mechanical and Aerospace Engineering, North Carolina State University, Raleigh, Department of Mechanical and Aerospace Engineering, North Carolina 27607, USA, Dec. 1976. 86p. Illus. Bibli. (In English)

This report describes the sources and control of noise due to structural vibration and aerodynamic phenomena in woodworking machinery. Workpieces, tools and machines are sources of sound vibration which is reduced by controlling excitation and response: increased stiffness, increased damping and alterations of wave characteristics. Cutting tools, e.g. long cutters and circular saw blades rotating close to stationary surfaces and exhaust systems are sources of aerodynamic noise. These sources are controlled by changes in rotational speed, cutterhead-table clearance, cutterhead-table length, knife projection with or without a lip or knife geometry. Conclusions are based on theoretical analysis, experimental investigations and field studies.

CIS 81-382 Noise due to vibration of machinery and industrial plant (Radiación sonora de elementos vibrantes de máquinas e instalaciones industriales).. Querol J.M. Prevención, Apr.-June 1960, No.72, p.20-25. Illus. 4 ref. (In Spanish)

Contents: vibration, noise impact, noise, acoustic characteristics of materials; sound emission of vibrating machinery (formula); simple methods of sound level measurement; practical advice for reduction of machine noise, especially circular saws.


Analysis of 208 audiograms of workers from all age groups engaged in the building trade. Tonal audiometric recordings are studied to determine the influence of age, duration of exposure, workplace, and use of hearing protection. Hearing loss increases progressively throughout occupational life, especially for carpenters working indoors. There is an evident correlation between noise from woodworking machines and hearing loss among carpenters. The preventive role of the occupational physician is stressed.


This report presents the results of the third part of the research project on noise from woodworking machines (Part 1: CIS 78-897, Part 2: CIS 79-392) covering the following categories: sanding machines (belt, drum), circular saws, double-end profilers, chippers and choppers, electric planes. It gives techniques for measuring and calculating emitted noise and perceived noise, and data on 206 machines, with frequency spectra (diagrams and tables). There is a section on primary and secondary measures for reducing noise from these machines.


Machine noise is measured basically according to DIN 45 635, Part 1. The above-mentioned parts contain additional specifications for various machine categories and tools (1601: metalworking lathe; 1602: planers; 1650: universal metalworking presses; 1650: wood planers; 1651: wood circular saws; 1652: spindle moulders; 19: office machines; 23: gear drives; 26: hydraulic pumps; 27: printing and paper converting machines; 33: construction equipment. These additional specifications cover chiefly conditions of measurement, which vary according to type, installation, and operating conditions.


Questions dealt with in this series of papers are: dynamic behaviour of disc-shaped tools (vibration due to bite of blade and axial play, air turbulence, friction; possibility of damping vibration; importance of residual blade stresses (noise reduction by modification of stress distribution)); noise control measures during sawing of light alloys, tubes, steel sections and bars, effects of tooth geometry on noise produced by wood saw blades; noise reduction during wood sawing by the use of laminated blades (vibration-damping layers); noise reduction during stone cutting (laminated blades or use of damper, damper flanges, viscoelastic chucking, soundproof closures).


Results of a survey of noise levels in 28 medium-sized woodworking plants, supplemented by laboratory tests. The noise characteristics (frequency spectra) are given for a range of machines: saws, surface planers, thicknessers, spindle moulders, combined machines (moulders, tenoners, veneering machines). In 80% of the workplaces studied, noise levels were in excess of 90dB(A), and 20% exceeded 100dB(A). Apart from the noise due to machines, other factors were involved, such as the way the machines were operated, the number of machines per unit area, and noise reverberation. Various noise control solutions were proposed (acoustic enclosure, silencing by antivibration mountings, form of sawblade teeth, notched table lips and air deflecting panels on surface planers, reducing speed of rotation, carbide tips, alterations in workshop layout).


During the use of pneumatic nailing hammers ceiling sound pressure levels between 121 and 137dB(A) and effective sound levels between 105 and 112dB(A) were measured. Description of working conditions in manufacturing large boxes, with results of octave frequency analysis and diagrams showing time-related variations. Comparison with data obtained from using a silenced nail-driving hammer (silencer on the exhaust air outlet, silenced piston). A reduction by 8dB(A) of the mean continuous sound level was measured. A similar noise reduction can be obtained by a relatively simple transformation of older types of pneumatic nailer.


Report prepared jointly by the Norwegian Woodworking Institute and the Nordic Council for Technical and Scientific Research: theory of sound (hearing damage risk criteria, noise measurement); how to make a noise chart; typical noise levels measured near woodworking machines; practical examples of noise control (reduction of noise at source by limiting speed of rotation, length of cutter blocks and projection of cutters, mounting of faring large boxes, with results of octave frequency analysis and diagrams showing source, according to the prescribed-path method.

CIS 79-1269 Effect of helmet underhats on the attenuation of earmuffs (Kopfdämmung mit Unterhut). Godenhjem E., Perkio K., Starck J. Työterveyslaitoksen tutkimusyksy, Bielefeld, Germany, 1977. 32p. Illus. 8 ref. (In (In German))

Results of a survey of noise levels in 28 medium-sized woodworking plants, with results of octave frequency analysis and diagrams showing source, according to the prescribed-path method. Part 2 describes noise emission from multiple-cutter planers running idle and in operation. Noise due to the tools, obstacles to airflow, cutter block speed, number of cutter blocks, exhaust ventilation, blunting of cutter edges, the workpiece, and quantity of stock removed is studied. The primary noise control measures proposed relate to the tools and their adaptability to the workpiece. The theoretical basis of noise emission and immission measurement is described, with results of measurements on 34 multiple-cutter planers running idle and in operation. Noise due to the tools, obstacles to airflow, cutter block speed, number of cutter blocks, exhaust ventilation, blunting of cutter edges, the workpiece, and quantity of stock removed is studied. The primary noise control measures proposed relate to the tools and their adaptability to the workpiece.


Planners and moulders for simultaneous working of several sides of a workpiece are among the loudest woodworking machines (noise levels up to 120dB(A)). The theoretical basis of noise emission and immission measurement is described, with results of measurements on 34 multiple-cutter planers running idle and in operation. Noise due to the tools, obstacles to airflow, cutter block speed, number of cutter blocks, exhaust ventilation, blunting of cutter edges, the workpiece, and quantity of stock removed is studied. The primary noise control measures proposed relate to the tools and their adaptability to the workpiece. The theoretical basis of noise emission and immission measurement is described, with results of measurements on 34 multiple-cutter planers running idle and in operation. Noise due to the tools, obstacles to airflow, cutter block speed, number of cutter blocks, exhaust ventilation, blunting of cutter edges, the workpiece, and quantity of stock removed is studied. The primary noise control measures proposed relate to the tools and their adaptability to the workpiece.


On account of their high cutting speeds woodworking machines with rotating tools are among the loudest types of machinery. In this research report, noise radiation of the chief woodworking machines are measured in order to determine noise exposure limits and to elaborate control measures. Part 1 presents a standard noise measurement technique with a standard noise source, according to the prescribed-path method. Part 2 describes noise...
emission measurements at: planers, bench-type circular saws, spindle moulders, multi-blade circular saws, multi-cutter planing machines, double­
ed planers, belt sander, and chain saws. 157 machines of different types from various manufacturers were tested. The quietest was a bench moulder (87dB(A)), the loudest a chopper (130dB(A)). There is a detailed analysis of factors influencing the noise of the individual machines when running idle and under load (tool, obstacles to air flow, cutting speed, exhaust, work­


Report of experiments in which the whistling noise of idling circular saws was reduced by the choice of a rotation speed at the transition of 2 vibration frequencies, and broadening the transition phase by fitting permanent mag­


Record of proceedings of a conference (Washington, D.C., USA, 5-7 Apr. 1976), sponsored by the International Institute of Noise Control Engineering. The text of some 130 communications is given, under the following discus­sion headings: advanced techniques - applications to noise control; machin­ery noise measurement, evaluation and noise prediction; quiet-design concrete block machine; noise reduction when milling thin walled workpieces; noise reduction methods in centrifugal fans; a non-con­taminating silencer; noise generated by the translational movements of a fan, etc.; aircraft and airport noise; noise measurement, analysis and instrumentation; reduction of in-plant noise exposure (an effective hearing preservation programme in industry; international standards and legislation on occupational noise exposure; reduction of noise from a polish and buff lathe, from data processing card manufacturing equipment and from oil fired burners; design of exhaust mufflers for axi-compressors; design and testing of mufflers for pneumatic drills, etc.); regular medical examinations (to detect both circulatory problems and those of chain saw users presented a complex of nerve, muscle and joint symptoms.


Study of the onset of white finger (Raynaud’s phenomenon) in workers whose hands are exposed to vibration. Reactions between exposure of the hands to vibration and the first symptoms of white fingers. The development of the condition can be assessed by the measurement of the vibration amplitudes of the tool being used. Implantation for users of chain saws: establishment of the maximum permissible vibration amplitude (1-3m/s²). For full-time logging work using a light professional chain saw, the appearance of white fingers is expected in 10% of workers after 4 years of exposure and in 50% of workers after 10 years.


Contents of this research report: survey of cases due to vibration caused by portable machinery: research into the effects of chain saws (measurement of vibrations, evaluation of their effects); 37 case studies of forestry workers (symptoms, cold-pressor tests); preventive measures (non-vibrating and heated handles, special gloves, work breaks depending on the workload and on the intensity of cold weather - several short breaks are recom­mended); regular medical examinations (to detect both circulatory problems and existing injuries); improvements in the design of chain saws and their handles.


Results of a field study conducted among chain-saw operators in Wakayama prefecture, Japan, in Dec. 1978. 18 of 51 operators had Raynaud’s phenomenon. The majority of operators with Raynaud’s phenomenon showed an increased response to the cold pressor test. Peripheral circulat­ory function in operators with Raynaud’s phenomenon was lower than that in operators without Raynaud’s phenomenon, although cases with normal function of peripheral circulation were present in operators with Raynaud’s phenomenon. Workers with Raynaud’s phenomenon were older than those without, and their long-term exposure to vibration was greater. There was no significant correlation between symptoms and the length of exposure.

CIS 88-360 High impulse acceleration levels in hand-held vibratory tools: An additional factor in the hazards associated with the hand­


The application of Fourier analysis in occupational hygiene is illustrated by examples of vibration measurements on self-propelled agricultural machines and chain saws.


Hand-grip force was measured in 63 lumberjacks in 1978 and again in 1980. Lumberjacks with vibration-induced white finger had lost 21% of their muscle force during the two years. Lumberjacks with no hand-arm symptoms had lost 5% of their muscle force in the same period. Lumberjacks with subjectively diminished hand muscle force had a slight increase in muscle force during the follow-up time. These results suggest that long-term exposure to vibration causes a decrease in muscle force.


This investigation involved 7 lumberjacks with bilateral vibration-induced white finger (VWF) and 7 age-matched controls. During body cooling systolic blood pressure was measured in one finger of each hand of the subjects at 30°, 15° and 0°C. Vasoconstrictor response was larger in the VWF-affected workers than in the controls at 15° and at 0°C. With unilateral sympathetic nerve block the cold provocation test was repeated on both fingers. The blocked finger affected by VWF showed no significant difference in cold response between the two cold provocation tests, while the blocked finger affected by VWF showed a response similar to that of controls. The median sympathetic vasoconstrictor response at 6°C was about twice as large as the local response during the no-block cold provocation. The sympathetic vasoconstrictor re­

CIS 85-1863 Comparative study of vibration disease among operators of vibrating tools by factor analysis. Futatsuka M., Yasutake N., Sakurai T., Matsumoto T. British Journal of Industrial Medicine, Apr. 1985, Vol.42, No.4, p.260-266. Illus. 17 ref. (In English)

Principal component analysis was performed to determine the relationship between subjective symptoms experienced by workers using vibrating tools and the tools they use. The tools included were brush saws (41 workers), rock drills (39), chipping hammers (42) and chain saws (49). 86 controls were also included in the study. Complaints of rock drillers reflected peripheral circulatory problems and those of chain saw users presented a complex of nerve, muscle and joint symptoms.
The measurement of the root-mean-square (rms) acceleration of vibration does not take into consideration the short high-peak values of the vibratory signal which may contribute to vibration-induced disease. A method for evaluating the impulse character of vibratory signals is given, and impulsiveness is defined as the difference between the peak and rms signals. Measurements were taken during pedestal grinding, during chain sawing with 3 differentgenerators, using saws and using a chain saw driven with a pneumatic hammer. Analysis of these measurements using the ISO draft standard and an evaluation of impulsiveness provided additional data and partly explained the observed symptoms of vibration-induced white fingers. (43526)


The 35 papers presented at this symposium organised by the Yugoslavian Institute of OSH Documentation in cooperation with the International Labour Organisation (Niš, Yugoslavia, 21-24 Sep. 1982) covered: health effects and exposure limits; physical quantities and measurement; preventive and protective measures; vibration hazards in various branches of economic activity.

(43001)


Given the influence of mechanical impedance (hand pressure and handle grip) on the vibration of portable vibrating tools, the effect of vibration isolators should be measured under constant mechanical impedance. The relation of theory to practice is illustrated by various types of vibration isolation mechanisms for rotary- and piston-engine tools. A new chain saw driven by a 2-cylinder engine shows a vibration level low enough to promise a real reduction in vibration disease. (42922)


Both tests were done in 49 chain saw operators, 19 patients with vibration disease (VD), and 12 controls. Mean skin temperatures in the last 5min of immersion and recovery activity were similar in all groups. Hyperaemia time in the nail press test was longer in the VD group. The difference was more marked after immersion at 5°C than at 10°C. Vibration and pain sensitivity were lower in the VD group. Immersion at 10°C is as effective as at 5°C for detecting nervous disorders, but less effective for detecting circulatory disorders. Raynaud’s phenomenon and moderate circulatory disorders can be identified with the 10°C test. (42920)


Neurological or neurophysiological examination of these patients, who worked with chain saws, showed slight evidence of polyneuropathy in the lower extremities in 42, peripheral neuropathy in the upper extremities in 39, and none in 22. No other clinical, laboratory or exposure data distinguished the 3 groups. The pathogenesis of vibration syndrome is discussed on the basis of the results. 2 possible explanations are put forward for the high prevalence of neurogenic damage in both the upper and lower extremities: (1) neuropathic patients tend to acquire vibration syndrome more readily than the general population, and (2) vibration also induces neuropathic changes in the lower extremities (which cannot be explained by a direct effect). The importance of careful neurological evaluation of patients with vibration syndrome is emphasised. (41695)


51% of 146 tree fellers from 7 coastal lumber camps had symptoms of vibration white finger disease (WWFD) on the basis of questionnaire responses and objective (finger rewarming rate) tests. The median latency period was 7.3 years. Symptoms were present in 70% of men engaged in felling for 11-15 years and 75% of those active for >20 years. Prevalence of symptoms in a control group was 2%. There is an urgent need for corrective or preventive measures to reduce the prevalence of WWFD in British Columbia. (41112)


In a population of 2944 users of chain saws, medical examination revealed that 832 required medical treatment for vibration disease or Raynaud’s phenomenon. Methods of objective examination and the recognition and diagnosis of vibration disease are discussed. Criteria for classification of symptoms and the degree of disability are also explained. (40812)


This experimental French standard provides general principles for the formulation of specific test procedures to measure vibration emitted by the grip surfaces of hand-held and hand-guided machines. Several methods for characterising vibration are presented and general specifications regarding the installation, operation and use of the machines during tests are given. The standard applies to percussion, rolo-percussion, rotating and reciprocating machines. Contents: scope; references, symbols, abbreviations and definitions; general guidelines for setting up the tests; parameters to be measured and proposed methods; instrumentation to measure vibrations (specifications for the measurement systems, for the location, orientation and types of acceleration measuring accelerometers, and for recording of data); presentation of results. (40177)


Halford capillary microscopy in 107 forestry workers using chain saws for more than 3 years, and 115 manual workers who did not use vibrating tools, showed a prevalence of Raynaud’s phenomenon (61.7%) in the forestry workers, compared to 5.2% in controls, with a latency period 7.86 years after commencement of exposure to the hazard. The syndrome was usually mild, but the patients had an abnormally high incidence of accidents at work, including wounds and cut-off fingers (due to occupational accidents). The number of capillary loops was significantly reduced. The lumberers affected showed an abnormal spasm of the digital artery in response to cold; the predictive value of this test was 86%. Halford capillary microscopy should be systematically used in industrial medicine for monitoring workers using a vibrating tool. (39891)


Description of 2 cases of traumatic angiome in paper machine operators who used old fashioned manual hoists for moving rolls of paper weighing 300-500kg. The angiome was due to the vibration produced by the manual braking of the hoist. Partial ischaemia of the finger tips may also have played a role in the appearance of the disease, in combination with humidity. Attention is drawn to certain old-fashioned techniques that continue to be used in workshops that are otherwise fitted with the latest equipment. (39913)


A review of the growing use of the chain saw and air-leg rock drills in Japan since the 1950’s and the incidence of vibration syndrome among hand-held vibrating tool operators. In 1965, the Japan Association of Industrial Health organised a working group to study measures to prevent the development of vibration syndrome in workers; the work of this group is described. In 1970, the Ministry of Labour recommended that lumberjacks should not work with chainsaws for more than 2 hours/day; subsequently a similar recommendation was issued for the use of vibrating tools in industry and mining. (39066)

To determine the value of measuring urinary hydroxyproline for the diagnosis of vibration-induced musculoskeletal lesions, urinary hydroxyproline excretion was measured in 130 chain saw operators and 31 controls. The results were expressed as a ratio of hydroxyproline to creatinine. No significant correlation between hydroxyproline/creatinine ratio and age was found in normal subjects. In chain saw operators, grip and pinch strength decreased and pain in the hands increased with increasing total operating time; in the group with <3,000h exposure, the hydroxyproline/creatinine ratio was significantly higher than in the group with >3,000h exposure. The hydroxyproline/creatinine ratio was higher in the group with hand pain than in the group without, and was inversely correlated with grip and pinch strength in operators ranging in age from 40 to 69. Urinary hydroxyproline may therefore be used as an indicator of vibration-induced musculoskeletal damage.


Report of a study of vibration-induced white finger (VWF) in which 39 chain saw operators (13 with VWF and 26 without fingersymptoms) and 20 age-matched controls underwent cold-provocation testing measuring the finger systolic blood pressure with a cuff technique during combined body cooling and finger cooling to 30, 15 and 6°C. The finger most often showing Raynaud's phenomenon (most often the 3rd and 4th finger) was cold-provoked and a non-affected finger was used as a reference. The systolic pressure gradient measured at 30°C from the upper arm to the cooled finger was increased in the chain saw operators most severely affected by VWF compared with the control group and with sawyers without VWF. Chain saw operators without VWF had an increased digital arterial response to cold at 15 and 6°C compared with the control group and decreased cold response compared with chain sawers with VWF. Only one of 38 chain saws used by the men did not exceed the exposure limit proposed by ISO.


The work described has been carried out with the aim of developing a test rig incorporating hand models. The hand models should have dynamic properties similar to those of the human hand and the movements in the rig must have good repeatability. The dynamic properties of the human hand were measured in the laboratory. The results were compared with those obtained by other authors and used to test 3 different hand model ideas. One of these was further developed and designed to fit in a test rig. Measurements were made on chain saws in the rig during cutting and with the cunning free. The results are compared to similar measurements on hand-held chain saws. The hand model test results agree with the hand-held measurements but have much better repeatability.


The vibration generated by 9 chain saws, 3 samples each of 3 popular types, was assessed when the saws were unused and after every 100h of use up to 500h. The greatest changes in vibration levels occurred during the first 100h of use. The levels increased in the rear handle and in the front handle in the direction of the cutting blade. Measurement showed that the German (Democratic Republic) TGL standard would permit the saws to be used for 5-12h per day whereas the ISO standard would allow 4h of daily use. Vibration levels were not affected by the pressing force required to cut a frozen tree. Levels of vibration decreased more in the front handle than between the rear handle and the wrist.


115 forestry workers using chain saws and 46 patients with chronic vibration disease were studied. Detailed psychiatric, neurologic and psychological findings are given.

CIS 80-1869 Vibration injuries of the hand and arm - their occurrence and the evolution of standards and limits. Griffin M.J. Research paper 9, Health and Safety Executive, 1980. HM Stationery Office, P.O. Box 569, London SE1 9NH, United Kingdom. 36p. Illus. 113 ref. (Also published as a University of Southampton report). (In In English)

Alternative methods of rating the severity of vibration exposure to the hand and arm are reviewed and British, international, USSR, Czech, Japanese, and Swedish standards are discussed critically. Vibration conditions causing vibration white finger are compared with existing vibration limits, and the cause-effect relations between vibration and vibration injuries is discussed. Problems associated with chain saws, grinders and other rotary tools, percussive metalworking tools, and pneumatic hammers and drills are reviewed: it is considered that the extent of vibration injury in the United Kingdom may be far greater than has been documented. Proposed vibration limits in various countries are summarised critically. Most do not adequately specify the importance of variables determining the vibration hazard. Problems of measuring tool vibration are dealt with. Recommendations on all these matters are made.


The vibration caused by 166 chain saws, types BK-3A, PS-90, PS-80, Partner R-11 and Jobul-7, was measured at the surface of the saw handle with a Bruel and Kjær instrument during felling, lopping, and bucking. Vibration velocity was several times greater than that permitted by Soviet standards. Most saws used at present in forestry work are a potential source of vibration disease.


Pulse wave changes were measured by a photoelectric plethysmographic method during muscular work and vibration exposure in the other hand. Findings were classified as dilatations, constrictions, or constant amplitude. Contralateral muscle work produced vasodilation alone but combined with vibration sometimes caused vasoconstriction (vasospasm) in the contralateral hand. Most vasospasm occurred at 60 and 100Hz, the most severe at 200 and 400Hz. Occurrence of vasospasm correlated with white finger severity in the subject.

CIS 80-77 Hand grip forces during chain saw operation and vibration white finger in lumberjacks.. Färkkilä M., Pyykkö I., Koronen O., Starck J. British Journal of Industrial Medicine, Nov. 1979, Vol.36, No.4, p.336-341. Illus. 17 ref. (In In English)

Hand grip force (HGF) at the front and rear handles of a chain saw were measured during work in 89 lumberjacks. Results were compared as the ratio of HGF to maximum voluntary compression force (MVC). Lumberjacks with vibration-induced white finger had a higher HGF/MVC than those with vibration pain. HGF at the front handle decreased by 7%, respectively, of their MVC at work. Those experiencing pain in the arms had a lower HGF/MVC. Measures recommended to diminish the grip force, and thus prevent the vascular symptoms of vibration syndrome are: modification of handle design, use of special gloves, counselling of lumberjacks, and adaptation of working methods.


This standard (effective 1 July 1980) applies to operating controls for these frame saws. It defines the limits values for speed of vibratory movements (in m/3) and their levels (in dB) in 6 frequency bands, for the operator's seat.
and for the place where he habitually stands. Description of the method used for measuring vibration transmitted from the floor, and reproduction of a log sheet for entering results. (23203)


Statistics on 4,074 agricultural workers show more than 5% of them to suffer from Raynaud's syndrome. In chain-saw operators the prevalence is 45%. Detailed analysis of the cases brought out the role played by duration of exposure and saw weight, confirming the traumatic aetiology of many cases of Raynaud's syndrome, supported objectively by the topography of the damaged vessels. Hypotheses are presented concerning the causation of vibration-induced Raynaud's disease. Preventive measures are: limitation of duration of exposure and weight of the equipment, use of anti-kickback chains, fitting of an open vibration-damping insular handle with a triple-layer sleeve of rubber, semi-hard foam and soft plastic. The study is summarised and supplemented by a clinical article by the same author appearing on p.405-408 of the same issue. (30855)


The grip force of 51 lumberjacks and 7 controls was measured during a compulsory health examination. The subjects compressed with their left hand for 5min with fluctuating maximal force and with their right hand for 1min with maximal constant force. The tests were repeated with 5 different levels of vibration and without vibration. Individual forces varied in the 5min experiment from 25 to 122N. The strongest subjects were in a group affected by vibration, whereas those with subjective loss of force. The worst 15% were in the group subjectively most affected by vibration disease. No vibration frequency was particularly harmful to grip force and it was not possible to determine the normal limits of this force. (30059)


A literature survey dealing with various aspects of the question (length of exposure, climatic conditions, clinical manifestations, arteriography and morbidity, anatomy of vibration) is followed by a report on 9 cases with the following main findings: Raynaud's syndrome occurs after a length of exposure ranging from 5 to 13 years; onset of the syndrome is affected by climatic conditions; sensitivity disturbances, especially in the region of the ulnar, median and radial nerves were observed; examination of the joints showed 3 significant cases of Dupuytren's contracture; stage 1; the results of arterial examinations were not significant. (20921)


Study of trends in cases of vibration disease notified (1966-1975) in Finland, where chain saws used in the logging industry constitute the principal hazard, followed a long way afterwards by pneumatic hammers and portable grinders. The article, which is illustrated by graphs, comments on the course taken by the disease according to duration of occupational exposure, breakdown of severity rates (average disability rate of 23% between 1972 and 1975), breakdown of notified cases by patient's age, trends in frequency rates and future trends. (20172)


Text of the papers to the conference (28-31 Oct. 1975, Cincinnati, USA). Medical and physiological aspects (peripheral blood supply disturbances; occlusive arterial disease; vibration enhancement of blood-arterial wall macromolecule transport; treatment of severe secondary Raynaud's disease; traumatic vasospastic disease in chain-saw operators; hygienic aspects of occupational hand-arm vibration (HAV), etc.); epidemiological aspects (longitudinal study of Raynaud's phenomenon in chain saw operators; Vibration injury in rock drillers, etc.; diagnostics and epidemiology of vibration disease and hearing impairment in motor sawyers; finger-hand-armsyndrome; vibration related foundry diseases; measurement and monitoring (review of 3 years' HAV research; evaluation of human exposure to hand-transmitted vibration; measuring vibration of hand-held pneumatic tools; measurement techniques for HAV; use of thermography in the diagnosis of HAV disease; measurement problems of the study of segmental vibration); progress in reduction of HAV in power saws in Japan, Sweden, etc.; FAO/ECCE/LO draft resolution on HAV for modern antivibration chain saws: recommendation for medical monitoring). Alphabetical list of speakers. (20059)


In research on 240 cases of chain saw disease, symptoms were classified into 4 categories: (1) peripheral circulation disorders; (2) peripheral nervereactions; (3) motor function disorders and bone changes; (4) central nervous system disorders. Methods of detecting these symptoms are described in detail. Diagnosis must be based on objective symptoms such as angiography, whiteness, delayed nerve conduction velocity, muscle twitching or contractions, EEG, EMG, etc. If patients with positive symptoms do not recover after three years of treatment, the condition is deemed incurable. Diagnostic criteria are given. (26824)

CIS 78-188 2 case studies of respiratory disease with corn weevil precipitins present (A propos de 2 cas d'affections respiratoires avec précipitines au charengon du blé).. Aerts J. Université de Paris VI, Faculté de médecine Pitié-Salpêtrière, Paris, France, 1977. 60p. 47 ref. (In (In French))

MD thesis. A review of the various immunological reactions in human pathology and the resultant disorders (especially extrinsic allergic granulomatoses) is followed by 2 case studies in occupationally exposed workers, a baker and a flourmill worker engaged in bagging flour. The first developed pulmonary fibrosis, the second asthma, but in both cases, in spite of the totally different types of lung disorder involved, specific precipitins of the corn weevil (Sitophilus Granarius) were observed. The first case would appear to fall within the category of extrinsic allergic alveolitis, but no precise conclusion could be drawn as regards the second. The studies are followed by a literature survey of the role of the corn weevil as an antigen. Health protection measures (use of face masks and exhaust ventilation of dust) are difficult to enforce in the case of manual workers and those performing heavy work in a hot environment. Treatment of cereals in storage bins with insecticides gives rise to other problems. Preventive medicine must rely chiefly on early diagnosis from the first clinical or radiological signs. (20650)

CIS 78-100 Development of a simulator for use in the measurement of chain saw vibration.., Abrams C.F., Suggs C.W. Applied Ergonomics, Guildford, United Kingdom, Sep. 1977, Vol.8, No.3, p.130-134. Illus. 9 ref. (In (In English))

A simulator was designed on the basis of the driving point mechanical impedance characteristics of a human operator. The literature is reviewed and the experimental arrangement described. The response of the simulator in terms of octave band analyses of chain saw vibration was satisfactory over a frequency range of 70 to 1,670Hz. (26888)

CIS 78-84 Treatment and prevention of chain saw (Raynaud's) disease.., Habu K., Hori Y. Published by Kanehara Shuppan Inc. 2-31-14 Yushima, Burikyo-ku, Tokyo 113-91, Japan, July 1977. 175p. Illus. 142 ref. Price: Y.5,400. (In (In Japanese))

This monograph reports on studies in 1,240 chain saw operators with Raynaud's syndrome. Part 1 contains chapters on the pathophysiology of treatment, central nervous disorders and their treatment, and the white-finger symptom associated with the disease. Diagnostic criteria are described. Part 2 is devoted to prevention. As the most effective preventive measure, prohibition of the use of chain saws, is not economically feasible, control of their use is necessary. (28640)


The advantages of thermography over contact thermometry in detection of vibration hazards were in terms of octave band analyses of chain saw vibration was satisfactory over a frequency range of 70 to 1,670Hz. (28688)


The advantages of thermography over contact thermometry in detection of vibration hazards were in terms of octave band analyses of chain saw vibration was satisfactory over a frequency range of 70 to 1,670Hz. (28688)
CIS 77-88 Analytical vibration analysis of non-isolated chain saws.


The authors investigated the vibration pattern of non-isolated chain saws with the aid of an analytical model. The machine was treated as a rigid body (which is the case at the normal operating speeds) with 6 degrees of freedom. The mathematical results correlate well with experimental results as regards the vibration amplitudes at the saw handle. Vibration in the vertical direction can be greatly reduced by balancing the engine flywheel and clutch, whereas the rotational motion in the horizontal plane can be reduced by minimising the mass moment of inertia of the engine connecting rod.

CIS 77-72 Physical examination of workers with vibration syndrome due to use of chain saws.


Physical examination of 282 forestry workers showed mild lesions of the vibration syndrome in 23, a need for medical treatment in 189 and an intermediate stage of development in 90. Recovery of skin temperature after the hand-cooling test, threshold of vibrotactile sensation and grip strength were especially useful tests of severity. Low skin temperature of the hands at rest, plethysmographic abnormalities and delayed recovery after the nail-press test were often found in severer cases.

II.

3.2. Dust and vapour


In 1980, 47 Swedish gluing workers exposed to formaldehyde and a non-exposed control group of 20 persons were examined by means of spirometry and nitrogen wash-out. 5 years later (before and after a work shift and after a 4-week absence from work) they were re-examined. In 1980 acute effects on lung functions had been found during a workshift. Five years later, 13 persons had been transferred to other duties. A slowly progressive impairment of pulmonary function was detected when the formaldehyde exposure averaged 0.4-0.6mg/m³ of air. Pulmonary function returned to normal in the non-smokers during a 4-week vacation but remained impaired in the smokers and a significant dose-effect correlation between exposure and impairment was found in the smoker group. There were relatively more persons with elevated IgG values among those who had been transferred than among those who had not been. There were no differences in IgG between the 3 groups.


This report is based on contacts, a questionnaire survey, industrial hygiene surveys and a literature review. The physical processes leading to wood dust in the workplace atmosphere and the chemical composition of the dust are discussed. A synopsis of potential health hazards faced by workers in the wood products industry is presented. The control measures (engineering and work-practice) by which worker exposure may be reduced are discussed. The numbers of workers who are exposed to wood dust and of the concentrations to which they are exposed are given. The attitudes of management and labour representatives, and of the scientific and occupational-health communities are presented. Regulatory control options available to the government are discussed and compared with regulatory approaches adopted by other jurisdictions in the host country. The report concludes with suggestions for further research into wood dust toxicity and for programmes aimed at reducing exposure.


Activated charcoal, Ambersons XE-348, Amberlite XAD-2, XAD-4 and XAD-7 were evaluated as solid adsorbents for work-room air sampling of acetone, methyl ethyl ketone, methyl isobutyl ketone, methyl n-butyl ketone, cyclohexanone and isophorone (3,5,5-trimethyl-2-cyclohexen-1-one). Activated charcoal had good capacity for the compounds, but most ketones decomposed on this adsorbent during storage. Ambersons XE-348 showed good capacity for the ketones and decomposition was insignificant. The XAD porous polymers did not retain acetone, methyl ethyl ketone and methyl isobutyl ketone well enough. Methyl n-butyl ketone and cyclohexanone were retained on XAD-4, and isophorone could be successfully sampled on all three XAD polymers studied.


Pathology (allergic rhinitis, asthma, alveolitis, pulmonary fibrosis); prevalence among exposed workers, mostly in the wood-processing industries (sawmills, carpentry, furniture making); diagnosis; progress of these diseases; medical and technical means of prevention; compensation (Table 47 of the General Schedule of the French Social Security System).


In a wood processing plant 25 workers, exposed to formaldehyde when handling urea-formaldehyde binders, were subjected to repeated cytogenic analysis of peripheral lymphocytes. Formaldehyde concentrations in the workplace air ranged from 0.1 to 0.3mg/m³ never exceeding the MAC 0.9mg/m³ and never exceeding.

In the summer season of 1982 and 1983, the frequencies of aberrant cells were 1.48 and 1.95%, respectively (in controls 1.57%); in winter (1983 and 1984), they were 3.17 and 2.13%. These results indicate a greater genetic risk for workers in the winter months.


A field test has been completed to compare the performances of dynamic and diffusive samplers for measuring styrene monomer vapours. Personal air sampling was conducted in duplicate; that is, two charcoal samplers, with battery pumps and two 3M 3500 Organic Vapour Monitors were used simultaneously. The two sampling methods yielded identical average results in personal air monitoring; however, the coefficient of variation for the charcoal tubes was dramatically higher than that for the diffusive monitors.


The analytes are desorbed in a stream of an inert carrier gas and are accumulated in a reservoir, from which a fraction of the gaseous sample can be drawn for gas chromatographic analysis; the entire desorption cycle is controlled automatically by an electronic unit. The analysis can be repeated several times, and standards can be added to the sample in the reservoir for identification and/or quantitation of desorbed compounds. Thirty-four solvents were tested individually and in mixtures; the desorption yields (90%) and the reproducibility of the yields (2% standard deviation) are satisfactory when compared with the corresponding data for the NIOSH standard (carbon disulfide) desorption technique, and are independent of the mixture composition, the relative humidity of sampled air and the concentration in the range usually observed in industrial hygiene practice.


The composition of exhaust emissions from 2-stroke chain saw engines was studied under laboratory conditions. The compounds sampled were hydrocarbons, aldehydes, nitrogen oxides, carbon monoxide, tetramethyllead, dibromoethane and polycyclic aromatic hydrocarbons. Operator exposure to chain saw exhaust was evaluated under various logging situations. There was no difference in average levels of exposure between logging in the pine forests or in the absence of the forest. The felling operation, however, resulted in high exposure levels of short duration, especially when the operation is performed while there is deep snow on the ground. This is judged to be the main cause of the discomfort experienced by loggers. Average exposure levels for loggers engaged only in felling are twice those for cutters.
who also perform limbing, bucking and manual skidding of the timber. Typical average levels of exposure are: hydrocarbons, 20mg/m$^3$; benzene, 0.6mg/m$^3$; formaldehyde, 0.1mg/m$^3$; and carbon monoxide, 20mg/m$^3$.


Formaldehyde, wood dust, phenol, pesticides, polycyclic aromatic hydrocarbons, terpenes, and solvents were determined in 19 Finnish plywood plants since 1965. Most of the concentrations have decreased, except for wood dust, which have remained the same. The data are used to evaluate exposure for an epidemiological study on cancer risks.


Respirator cartridges, 117 total of 14 different types, were evaluated in an outdoor environment at the chlorine dioxide (ClO$_2$) generation facility of a large pulp manufacturing company. Under the testing conditions described, all the cartridges removed ClO$_2$, effectively for more than 35 min.; the efficiency was acid gas - acid gas/organic vapour - organic vapour. Humidity equilibration did not have a significant effect on average cartridge capacity.


Time-weighted average (TWA) personal total and respirable dust exposures were determined gravimetrically for 48 subjects in 4 cabinet-making plants. TWA personal formaldehyde exposures also were obtained. Considerable variation was noted in the dust exposures. Cabinet-makers exposed to softwoods had a mean exposure of approximately one half of the current applicable ACGIH TWA-TLV, while hardwood exposure was twice the applicable TWA-TLV. The highest dust exposures were recorded for workers engaged in sanding. Workers in assembly areas had higher dust exposures, likely reflecting the fact that conventional dust collection devices for stationary woodworking equipment are not appropriate for hand-held tools and hand sanding. The poor correlation between paired total and respirable dust concentrations indicates that both measurements should be made. Some potential limitations to respirable wood dust sampling using 10mm nylon cyclones are noted, however. Area dust concentrations were significantly lower than personal exposures, emphasizing the importance of personal sampling data. Formaldehyde vapour exposures were very low.


Pair-mutistituton mutagens were isolated from the dusts of several untreated samples of beech wood and tested for mutagenicity in the Sal­monella/mammalian microsome assay. These compounds reverted Sal­monella typhimurium his-TA100 in the presence of Arroclor-induced rat S9 liver extract. These mutagens were toxic to the cells when tested in a histidine-rich medium (complete medium). Mutagenicity of the non-fractionated dust extracts could not be confirmed due to the presence of some inhibitory compounds. These inhibitors counteracted the reversion of bacteria when known mutants, such as benzo(a)pyrene, aflatoxin B$_1$ and ethyl methane sulphonate, were tested. The results indicate that beech wood dust contains (a) mutagenic constituent(s) which may contribute to nasal cancer among woodworkers, especially in the furniture industry.


Pulmonary function was studied in 66 wood trimmers exposed to organic dusts for an average of 17 years. The time of first exposure varied from 2 to 27 months later, and also during a working week. The results of forced expirometry and single breath nitrogen washout were compared with those obtained in local controls and in larger reference materials. Exposure levels of airborne spores of Rhizopus were determined, and precipitating antib­odies to Rhizopus antiserums were assayed. It is concluded that wood trimmers may develop restrictive pulmonary dysfunction, which might be explained by an immunopathological reaction to heavy mould exposure. Periodical examinations and threshold levels for organic dust are recom­mended.


Health hazards unique to particleboard include the generation of urea-for­maldehyde resins in wood aerosol and release of formaldehyde gas that can be inhaled by the worker. A particleboard aerosol was generated by a sanding process and collected under laboratory conditions that deter­mined the particle size distribution and formaldehyde content. Significant variations (p<0.05) were observed for the particleboard mass and gaseous formaldehyde collected between sample runs. No significant differences were observed for the aerosol size distribution determined and formaldehyde content in particleboard aerosol per unit mass for sampling trials. The overall mean diameter parameter and pattern of particleboard aerosol relative to that of AEROSOL with a mg of 2.01. A predictive model was derived for determining the expected formaldehyde content by particleboard aerosol mass collected and particu­late size.


Mortality statistics for 1979-1982 and data from the 1980 national census were used to calculate the relative risk of these cancers among Swiss furniture workers. There were 9 sino-nasal cancers among 41,687 cabinetmakers and 59 among 1,813,798 controls selected from the population at large. The standard mortality ratios indicate a relative risk of 8.6 for these cancers among the cabinetmakers. When different histological classifications are taken into account, the odds ratio for adenocarcinoma is 230.


Occupational nasal allergy to wood dusts in the furniture industry was investigated. The 45 year-old man examined had symptoms of sneezing, nasal congestion and irritation. A skin reaction test, nasal allergy induced test and the Prantsnitz-Kustner reaction test were carried out with extracts of moabi wood. It was found that the worker suffered from a so-called type-1 nasal allergy.


A tracer pulse method was used to investigate the spread of airborne formaldehyde from its source into the surrounding air and the distribution of the air supply in a particleboard mill. The contaminant flow was labelled with sulfur hexafluoride, and the supply of outdoor air with nitrous oxide. The pulse responses of the injected tracer gases were interpreted in terms of the age concept. The result of improvements in the ventilation system was studied through measurements of the formaldehyde concentration and with tracer gas tests. It was found that the approach used in this paper is applicable to charting airflow patterns in a complex industrial environment.

CIS 86-1670 Occupational asthma due to unheated colophony. Burge P.S., Wieland A., Robertson A.S., Weir D. British Journal of Occupational Medicine, Aug. 1986, Vol.43, No.8, p.559-560. Illus. 8 ref. (In English)

Case report of allergic asthma developing in a man who worked with colophony at room temperature. His exposure consisted of inhaling solid particles while crushing colophony.


Sulfur dioxide is collected on filters impregnated with glycerol/potassium hydroxide solution. Sampling can be carried out with a pump or by using ebulliometers. The different mortality ratios indicate a relative risk of 2.65, whereas the disease AWD was performed by ion chromatography. These methods were evaluated and compared to a colorimetric air monitoring badge system (ProTek). Laboratory tests showed that the accuracy of the filter methods is good and that samples can be stored. Water vapour does not interfere, but hydrogen
sulfide does cause a minor decrease in recovery. ProTek displays high accuracy but tends to decrease recovery. Field tests in a steel rolling mill and a sulfite pulp mill showed fairly good correspondence between the methods. (4673)

CIS 86-1390 Diseases caused by inhalation of microbial dust in furniture - Medical, microbiological and technical aspects. Proposed countermeasures

[Sjukdomar orsakade av inandat mikrobielt osed countermeasures CIS 86-1390 Diseases caused by inhalation of microbial dust in furniture - Medical, microbiological and technical aspects. Proposed countermeasures]

Air inhaled during the handling of mouldy material may contain more than 10s microorganisms/m³ and cause alveolitis. Preventive measures include information about the hazards of inhaling mould dust and about correct preservation techniques. Simple supplementary preservation methods should be developed as well as better methods to store woodchips, sawdust and straw, to monitor moisture and temperature of stored material and to reduce exposure to dust. Research is needed on harmful components of microbial dust and on safe exposure levels. The significance of mycotoxins and endotoxins should be studied further. More technical experts are needed to co-operate with physicians in the rehabilitation of patients with alveolitis. (4668)

CIS 86-1379 Upper respiratory irritation from controlled exposure to vapor from carbonless copy forms. Morgan M.S., Camp J.E. Journal of Occupational Medicine, June 1986, Vol.28, No.8, p.415-419. Illus. 15 ref. (In English)

30 workers with complaints of prior sensitivity to the forms were given brief, controlled exposure to vapours from carbonless forms and from bond paper in random, single-blind fashion. Nasal impedance increased 34% after exposure to carbonless forms and rose 8% after exposure to plain paper. However, frequency of symptoms did not differ between the 2 exposure modes, and was not correlated with the nasal measurements. Quantitation of nasal congestion by this technique may be a sensitive measure of short-term reaction to inhalation of irritants. (4658)


71 sawmill workers were identified as part of a group undergoing an extensive health and environmental evaluation in a pulp mill. This group was compared with a non-exposed control group. Exposure was highest for workers in direct contact with the wood. The peripheral blood leukocyte count was slightly lower in the exposed groups and their hematocrit was reduced, significantly so for heavily exposed workers. Urinalysis showed an increased prevalence of microscopic hematuria, especially with lower cell counts. No significant renal or hepatic effects were observed. (4659)


A discussion, based on 10 cases of occupational asthma due to exotic woods, of the value of measurements of residual functional capacity and airway resistance before and at 6 and 24h after sawing of a suspected allergenic wood. The patients' histories and clinical signs are compared with the results of respiratory function tests and allergological screening (skin and blood tests). The exposure tests are available and prove the origin of the asthma in half of the cases, but they cannot distinguish irritant from allergic asthma. Individual predisposition, the pathogenesis of these asthmata and their prognosis are also discussed. (4617)


This case-control study involved 3805 men who had worked at least 1yr in the particleboard, plywood, sawmill or formaldehyde glue industries between 1944 and 1965, and who were then followed up until 1981. No relationship was found between exposure to wood dust and respiratory cancer, though significantly raised odds ratios were observed for exposure to carbon monoxide and to alcohol present in wood dust. Exposure to terpenes and other products of the heating of coniferous woods was associated with a risk of respiratory cancer when the length of exposure exceeded 5yr. (4618)


The 1st part of this report describes the principle of passive sampling with information from the manufacturers of 3 samplers (activated charcoal without direct read-out). The 2nd part contains a report on performance studies in the laboratory: methods of sampling and analysis, the reference gas installation, results (influence of temperature, humidity, mixtures of substances and sampling period; stability on storage; recovery by desorption; interaction of specific substances with activated charcoal). The 3rd part presents the results of workplace sampling of toluene, ethylene, xylene, styrene, acetone, butanol, 4-methyl-2-pentanone, ethyl acetate, butyl acetate and acetonitrile. Correlation for the ketones were relatively low. 3 samplers were judged good for toluene, xylene and ethylene. Conditions required for proper sampling are noted. (4619)


Review of inconsistencies in the literature on the granulometric distribution of wood dusts and report of results of measurements on wood dust from sawing, sanding, turning and routing. Granulometric curves for different woods and woodworking methods are supplemented by scanning electron micrographs of a typical hardwood and a typical softwood. Softwoods gave proportions of fines (equivalent diameter <7.1μm) up to 10%; hardwood dusts contained 5-15% fines. (4613)


This case-referent study of male deaths in certain boroughs of London (United Kingdom) found a significant relationship between nasal cancer and occupations involving heavy exposure to wood dust on one hand, and between bladder cancer and road transport driving and the handling of leather on the other. Consistently raised relative risk ratios for bladder cancer were also found for some other occupations (woodworking, fitting, printing, machine, plumbing and automobile repair). (4614)


Exposure to organic solvent vapours (mixed aromatic hydrocarbons and hexane) was investigated in 16 small factories in Tohoku District; 14 of the factories produced lacquerware, the other 2, furniture. Spray coating operations were carried out in enclosures with efficient local exhaust, even in small family enterprises. In consequence, only 2 of the 189 workers surveyed were exposed to solvent vapours above the current occupational exposure limit. To avoid contact of freshly lacquered articles with airborne dust, no forced ventilation is used in drying areas. This can produce high local solvent concentrations, and lead to increasing contamination of workroom air as the day progresses. (4651)


The effects of wood dust on 50 cabinet-makers was examined. Woodworkers reported more nasal and eye symptoms and more cough, sputum and wheezing than did 49 controls. More irritated cells were present in the woodworkers' nasal cytological smears. In contrast to the control group, the woodworkers had a significant decline in lung function over the work-shift. An inverse correlation between baseline lung function and exposure index was also observed. Greater dust exposure was not associated with larger falls in lung function over the work shift. (4675)

CIS 86-458 Classification of occupational bronchial asthma of chemical aetiology (O klassifikaciš professional'noj bronh'al'noj astmy himičeskogo biologičeskogo). O'bganina V.N., Gigiena i professional'nøe zabolovkevanija, Nov. 1984, Vol.11, p.39-43. Illus. 7 ref. (In Russian)

3 groups of chemical substances play the main role in the development of occupational bronchial asthma: chemical allergens (compounds of chromium, nickel, cobalt, manganese, formaldehyde and its polymers, polychlorophenols, etc.); combination of these substances with industrial dusts (abrasives, quartz, cement); combinations of the allergens with irritating agents.
There are three main types of occupational bronchial asthma: simple asthma similar to the atopic form; asthma in combination with chemical and bacterial allergy; chronic asthmatic bronchitis. When workers are exposed to all these factors (allergens, dust and irritants) establishment of the presence of chemical allergy plays the main role in diagnosis of the disease. This can be done by determination of the length of contact with occupational allergens, clinical examinations, inhalation tests with chemical haptens or immunoologically specific reactions in vitro.


57 cancer cases from a retrospective cohort of male woodworkers formed the study group. They were matched by year of birth with 171 referents. Exposure to formaldehyde was assessed with job-exposure matrices. The median of the time-weighted average concentration was about 1ppm and the mean duration of exposure was 10 years among the exposed. No exposure-response relation was observed for the level, duration or dose (ppm-years) of formaldehyde exposure. The negative result may be explained by absence of effect, by too short a follow-up or by insufficient power for detecting a mild risk effect.


Description of an auxiliary ventilation system consisting of 2 devices: a hood and a jet stripper. The hood is a narrow, low-volume, high velocity slot hood located between a belt surface and a worktable; the push device is a jet stripper located inside a driven pulley hood opposite the operator side. Advantages of the system: it reduces wood dust emission, does not interfere with the operator’s work, requires minimal maintenance and is economical.


71 chlorophenate-exposed sawmill workers were identified as part of a group undergoing an extensive health and environmental evaluation in a pulp mill. This group was compared with a group (351) with no physical proximity to the area in which chlorophenates were used. A gradient of exposure was demonstrated from 230ppb in urine and 919ppb in serum for those directly handling the contaminated wood, to 139ppb in urine and 354ppb in serum for those working in the area but not in manual contact as compared with serum levels of 84ppb in the unexposed group. It was noted that the bulk chemical was primarily in the tetrachloro-form but the serum contained more pentachlorophenate. The urine proportions noted that the bulk chemical was primarily in the tetrachloro-form but the serum contained more pentachlorophenate. The urine proportions contained more pentachlorophenate. The urine proportions contained more pentachlorophenate. The urine proportions contained more pentachlorophenate. The urine proportions contained more pentachlorophenate. The urine proportions contained more pentachlorophenate. The urine proportions contained more pentachlorophenate.

CIS 86-187 Risks of physiological injury while working on tropical and indigenous wood with machines (Risques de troubles physiologiques lors du travail mécanique de bois tropicaux et indigènes). Jerimini C. CSST No.142, Caisse nationale suisse d'assurance en cas d'accidents, 6002 Luzern, Switzerland, Sep. 1985. 22p. Illus. 13 ref. (In French, German, Italian)

Skin injury and respiratory problems caused by contact with tropical wood dust, and - to a lesser extent - by contact with dust from native wood, have long been recognized. These health problems are due to endogenous substances in more than 100 species of trees, which cause various chemical reactions on the fine dust particles when there are mucous membranes during work with wood. The various protective measures available are described, whether at the enterprise organisation level or by means of exhaust ventilation of dust. These measures must be supplemented by the wearing of appropriate personal protective equipment.


In a 19-year follow-up study of 8414 furniture workers in Sweden, there were 11 cases of adenocarcinoma of the nasal cavity (0.2 expected) and 14 cases of sinonasal adenocarcinoma (0.3 expected). This is the largest cohort study ever conducted on the relationship between exposures to wood dust and sinonasal adenocarcinoma. No excess risk was found for other sinonasal cancers, nor for laryngeal and lung cancer.


6 sets containing each 5 passive dosimeters of one type and a charcoal tube were exposed to calibrated atmospheres containing benzene, toluene and xylene. Each set was attached to a side of a wire mesh cube. Statistical treatment of the results showed that each type of sampler had generally a high precision. There was a numerically significant difference between the types of samplers; this could be explained by the fact that since there was very little variation around the mean values, a small variation between samplers appeared significant. Any of the 5 types of dosimeters could be used for industrial hygiene evaluations with confidence.


A proportionate mortality study and an industrial hygiene were conducted by NIOSH in the shops of several car manufacturers in the USA. A significant excess of deaths due to colon cancer and leukaemia was observed. Total dust concentrations measured in the worker’s breathing zone ranged from 0.03 to 25mg/m³. The percentage of respirable dust ranged from 19 to 38%. Solvent exposure levels ranged from non-detectable to about 10% of the OSHA permissible exposure levels. Relevant recommendations for the improvement of contamination control are made (ventilation, materials, work practices, etc.).


48 sawmill workers exposed to terpenes (mean value 254 mg/m³ u-pine + delta-carene) and 46 non-exposed local controls were studied with regard to symptoms and pulmonary function. Dyspnoea was significantly more common in exposed subjects than in controls. Reduced FEV₁, an increased closing volume and a slope in the alveolar plateau (phase III) on single-breath nitrogen washout were seen on the Monday morning after 2 days off work. The decrease in functional residual capacity was not related to the duration of employment. No further change in pulmonary function was found after a day of occupational exposure to terpenes. The findings point to slight, obstructive but rather stable impairment of pulmonary function.

CIS 85-1861 Biological effect of exposure to carbon fibre dust (experimental data) (Izucenie biologiceskogo dejstvija pylej uglerodnyh arov na organizm (eksperimental'nye dannye)). Fedjakina R.P. Gigiena truda i professional'naya zabolavleniya, Mar. 1984, No.3, p.30-32. 3 ref. (In Russian)

In laboratory experiments, exposure of animals to dust of carbon fibre produced by the manufacture of composites with aromatic polycondensation made on the basis of acrylonitrile and cellulose hydrate produced slight pulmonary fibrosis and irritation of the lung tissue and respiratory tract. The dust of carbon fibres obtained from acrylonitrile had a stronger fibrogenic effect than the dust of carbon fibres obtained from cellulose hydrate. The data provide a basis for establishing a MAC for both dusts, i.e. 4mg/m³. Preventive measures have been elaborated.

CIS 85-1417 Occupational asthma due to an emulsified oil mist. Hendy M.S., Beattie B.E., Burge P.S. British Journal of Industrial Medicine, Jan. 1985, Vol.42, No.1, p.51-54. Illus. 11 ref. (In English)

Case study of a late operator who developed asthma due to the oil mist generated by his lathe on which it was used as a coolant. The diagnosis was confirmed using peak expiratory flow measurements and bronchial provocation tests. The worker reacted to the whole emulsified oil, to the pine oil preparation used as a reodorant, and to colophony, a constituent of the emulsifier.

CIS 85-1359 Wood as a disease-causing agent (Le bois en tant qu'agent pathogene). Hartmann A. Caisse nationale suisse d'assurance en cas d'accidents, 6002 Luzern, Switzerland, 1984, No.15, Médecine du travail. 10p. 26 ref. (In French)

This booklet, part of the collection "Médecine du travail" (Occupational Medicine), surveys the clinical, aetiological and pathogenic aspects of diseases caused by wood dust, including harmful woods, active substances, feedback sources, pathogenesis; clinical table of skin and respiratory diseases; medical and therapeutic preventive measures. In Switzerland, wood dust appears in the list of harmful substances established by the Ordinance on
accident insurance. Diseases caused by wood dust during work activities are considered to be occupational diseases. Indigenous and foreign types of harmful wood and the number of cases in Switzerland are given. (44465)

Incidence of bronchial asthma was significantly higher in woodworkers than in timber sawyers; the percentage of patients was 4.3% versus 1.1%. This difference depends on the individual states of the immune systems of the workers, the allergenicity of timber dust and workshop conditions. A case of asthma induced by inhalation of Chinese quince and rosewood timber dust was examined by skin tests, inhalation provocation tests and reactivity of basophilis to dust extracts. Bronchocostriction was due to an IgE-mediated allergic reaction. An occupational asthma induced by dust of Zelkova wood was also mediated by the same reaction. (44128)

Mortality study of a cohort of 5,108 men who worked in the Buckinghamshire furniture industry before 1968. 32.1% had died by the end of 1982. With the exception of nasal cancer there was no significant increase in mortality, nor any trend towards increasing mortality with increasing dustiness of the work, for cancer of any site. (44539)

The objective of this investigation was to determine if there was a seasonal effect on formaldehyde emissions from wooden paneling and shelving in a one-story office building. The formaldehyde concentrations for warm weather were about twice as great as those in cold weather. The simultaneous use of impinger and passive dosimeter sampling showed the latter to be more effective for this type of work. (44025)

Different concentrations of styrene, ethyl acrylate and n-butyl acrylate were sampled at 2 air velocities (0.22 and 0.44m/s) using a dynamic calibrated gas generation apparatus. Desorption efficiency from badges was consistently higher than from charcoal tube for all 3 monomers. Variations in air velocity and the angle of the air current at the dosimeter face affected significantly the dosimeters' sampling rate, thus requiring the application of correction factors to the results. (44022)

A calibrated mixture of 689ppm n-hexane in nitrogen was passed through charcoal tubes (200, 250, 300 and 400mg of SKC coconut shell activated charcoal material 12.6mm I.D Pyrex tubes) at flowrates ranging from 290 to 6670mL/min until the tubes were saturated and breakthrough occurred. No significant differences were found in collection efficiencies between flow rates in the laminar, transition or turbulent modes. (44019)

Mass examination of workers in the wood-product industries was conducted. Workers showing abnormal chest X-ray findings were over 40 years of age and had worked 20 years in these industries. The abnormal X-ray findings consisted of linear and small opacities. The abnormalities are probably associated with wood dust. Infusion of wood (Paulownia) dust into the lungs of rats produced foreign-body granuloma. These epidemiological and experimental studies suggest that wood dust causes pneumoconiosis in wood workers. (43805)

The spirometric parameters of 392 white male pulp mill workers were measured by standardised procedures and compared with those of a control group made of 310 white male railyard workers. There was a significant excess of respiratory complaints among the pulp mill workers. Younger non-smokers in the group, who worked in areas with detectable levels of chlorine, showed a reduction in airflow, and older non-smokers in the maintenance group a reduction in forced vital capacity. (43938)

Comparative study of 48 winder operators exposed to paper dust and 48 non-exposed office workers of the same paper mill. Parameters investigated were the total and respirable dust concentrations, bacterial and mould contents of dust, state of the workers' respiratory system (questionnaire and spirometry), and sensitisation (skin test and serological reaction). All results are tabulated. There were relatively more persons with a positive (both late and delayed) intradermal reaction in the exposed group than in the control group. An analysis of the spirometric results using multiple regression and allowing for differences with regard to age, height and smoking habits revealed a lower FEV1, maximal mid-expiratory flow (MMEF), maximal expiratory flow 50 (MEF50) and MEF25 in exposed workers with positive dermal reactions. (43585)

Evaluation of the feasibility to use charcole impregnated with triethylenediamine (TEDA) as a sorbent in respirator cartridges or high-volume air-cleaning adsorbers for trapping organic forms of radioactive in air. Desorption rates of TEDA from impregnated charcoal samples (5% TEDA) were measured from 70 to 100°C. The highest rate extrapolated to 25°C was only 0.12mg/m3, well below the vapour pressure of TEDA (3500mg/m3) and the exposure limit for similar amines (4-40mg/m³). Effects of varying flowrate, bed depth, humidity and increasing the TEDA molecular weight were examined. TEDA-impregnated charcoal could be safe to use at low temperature and air flow rates. (43288)

The ability of many varieties of respirable wood dust to induce contact dermatitis, impairment of nasal clearance, obstructive respiratory changes, asthma and sino-nasal cancer in workers in the woodworking industry is discussed. (43133)

I. There was no difference in the emission compositions and levels of different brands of chain saws, and none between new and used saws. Lean fuel-air mixtures gave higher proportions of aldehydes and nitrogen oxides and lower proportions of carbon monoxide (CO) and hydrocarbons than did rich mixtures. Methanol containing fuel gave twice as much formaldehyde as did normal gasoline, and methanol was a major component of the exhaust. II. Lumberjacks complained of cough and irritation of the eyes, nose and throat. Complaints and exposure levels were aggravated by deep snow, thick stands of timber and calm weather. Felling gave higher exposure than did limbing or cutting. Exposure can be reduced by improved working methods, which are described. III. Clinical and field studies confirmed the observations of Part II. Average exposures were well below Swedish TLVs. The correlation of carboxyhemoglobin concentration with CO exposure was too poor to permit its use as an indicator of exposure. (43939)

Article 1 is an analysis of the occupational histories of 839 cases of nasal cancer in Denmark. 2465 cases of other kinds of cancer served as controls. A slightly higher, but not significant, relative risk was found in persons with occupational exposure to chlorophenols, with the risk further reduced when adjustment was made for occupational wood-dust exposure. Article 2 is an
analysis of proportional mortality ratios for workers in British Columbia (Canada). Among workers potentially exposed to chlorophenols (woodworkers, farmers, railway labourers), no significant increases were found in the incidence of nasopharyngeal tumours, lymphomas or soft tissue tumours, with Hodgkin’s disease showing a significant increase (PMR of 250-250) among wood workers. (43002)


The methodology for monitoring breakthrough time in a carbon adsorber exhaust system of the vehicle coating operation of an automobile plant is described. On-line gas chromatography and total hydrocarbon instruments were employed. The time for the adsorber effluent concentration to reach a fraction (E\(\text{g}\)\(_r\)) equal to 10% of the OSHA combined limit for a mixture of solvents depended on the adsorber influent concentration. The problems of exposure limits, odour and CO\(_2\) concentrations, which are critical in determining the suitability of recycling adsorber exhaust air, are also discussed. (43037)

CIS 84-1907 Evaluation of the standard NIOSH type charcoal tube sampling method for organic vapours in air. King E.V., Ansul G.R., Hecht J., Vandervor F.A.J., I. It is suggested that MEK and cyclohexane (except for 1,2-dichloropropane, for which the recommended desorbent is coconut shell charcoal) may catalyse styrene polymerisation, and are unsuitable for use with this method. (45255)


This evaluation identified several shortcomings of the NIOSH method: dry air dilution, small dose levels (0.5-1.0 x OSHA standard for 5 - 53min) and lack of verification of test gas mixtures by on-line instrument calibration with certified mixed gas cylinders. Of the 22 compounds tested with an impinger to carbon concentration ratio of 0.5 to 10\(\text{g}\) and subsequent gas chromatographic analysis. Nonane and MIBK could be measured directly into charcoal tubes which were then stored for periods of up to 23 days at 4\(^\circ\)C before desorption with dimethyldimethyloxide and subsequent gas chromatographic analysis. Nonane and MIBK could be completely recovered after the 23-day storage period, whereas MEK and cyclohexane were stored irreversibly in the charcoal and could not be desorbed. (43886)


A comparative survey of filters used for the separation and collection of airborne particulates. The theory of filtration mechanism is developed. Selective efficiency and advantages for various filtering methods are presented for: fibrous filters (cellulose; fibreglass; quartz; mixed; plastic); membrane filters (esters, acetate and nitrate of cellulose; PVC; teflon; nylon; other polymers; silver; perforated polymers (polycarbonates). (42830)

CIS 84-1835 Chlorinated hydrocarbon solvent vapours in air - Laboratory method using charcoal adsorption tubes, solvent desorption and gas chromatography. Guidance Note MDHS 26, Health and Safety Executive, Health and Safety Executive Sales Point, St. Hugh's House, Stanley Precinct, Bootle, Merseyside L20 3QY, United Kingdom, May 1983. 6p. 16 ref. Price: £0.00. (In English)

Contents of this guidance note: Properties, uses, toxicity and first aid in case of massive exposure to ethylene oxide; determination method (sampling through a glass or metal tube packed with activated charcoal; desorption of the absorbed ethylene oxide by carbon disulfide; analysis of the solution with a gas chromatograph equipped with a flame ionisation detector). Scope: suitable for measurement over periods of 10min-8h, both for personal and area sampling. Analytical range: 1-200mg/m\(^3\) for 5l air samples. Precision: ±10%. Samples stored for more than 4 days without refrigeration will suffer substantial sample loss due to migration from the front to the back section of the charcoal. Interference is provided by high humidity and compounds coeluting with ethylene oxide. (42702)

CIS 84-1802 Styrene in air - Laboratory method using charcoal adsorbent tubes, solvent desorption, and gas chromatography. MDHS 20, Health and Safety Executive, Health and Safety Executive Sales Point, St. Hugh’s House, Stanley Precinct, Bootle, Merseyside L20 3QY, United Kingdom, Mar. 1983. 4p. 15 ref. Price: £0.50. ISBN 0-7176-0110-0 (In English)

Contents of this guidance note: properties, uses, toxicity and first aid in case of massive exposure to styrene. Determination method: carbon disulfide is used for desorption and the solution is analysed with a gas chromatograph equipped with a flame ionisation detector. Scope: suitable for measurements over periods ranging from 10min to 8h, both for personal and area sampling. Analytical range: 0.4-800mg/m\(^3\) for 10l air samples. Precision: ±10%. High humidity and the presence of compounds coeluting with styrene provide interference. Some grades of charcoal (but not 'conventional' coconut shell charcoal) may catalyse styrene polymerisation, and are unsuitable for use with this method. (43595)


Two studies were carried out by examining standardised mortality ratios of nasal cancer at a health centre and in 10 cities selected as wood industry areas in Japan. No statistically significant excess risk of nasal cancer was seen. This observation conflicts with published studies from 10 other countries; these studies all suggest an association of nasal cancer with employment in woodworking trades. (42834)


Academic dissertation. Workers with recent or past accidental exposure to high levels of chlorine or chlorine dioxide, and workers with long-term (≥5 years) exposure to typical ambient levels of the gases, were identified from the records of 14 Finnish pulp and paper companies. The 3 exposed groups and a control group of non-exposed workers from the same companies were subjected to interviews, chest x-rays and lung function tests. The effects of exposure were milder than those reported in earlier studies; cough, respiratory distress and chest pain were the most frequently reported symptoms. Men who were accidentally exposed to abnormal high levels of the gases secreted more pulmonary mucus and had more fibrosis of the lungs and more pleural changes than did unexposed men, but had normal lung function as a group. Men with long-term exposure had more chronic cough and mucus hypersecretion that did unexposed men, but no x-ray or lung function abnormalities. The apparent high chlorine tolerance of the population studied here may be due to chlorine-sensitive workers' transfer to other work early in their careers. (42444)

CIS 84-1323 Benzene in air - Laboratory method using charcoal adsorbent tubes, solvent desorption, and gas chromatography. MDHS 17, Health and Safety Executive, Health and Safety Executive Sales Point, St. Hugh’s House, Stanley Precinct, Bootle, Merseyside L20 3QY, United Kingdom, Mar. 1983. 4p. 16 ref. Price: £0.50. ISBN 0-7176-0114-5 (In English)

Contents of this guidance note: properties, uses, toxicity and first aid information are given for benzene. Determination method: Sampling is done through a glass or metal tube packed with activated charcoal. The collected benzene is desorbed by carbon disulfide and the solution analysed with a gas chromatograph equipped with a flame ionisation detector. Scope: suitable for measurement over periods in the range of 15min to 8h, both for...
personal and area sampling. Analytical range: 0.3-100mg/m³ for 121 air samples. Precision: <10% for benzene concentrations of 30mg/m³, at lower concentrations. High humidity and the presence of compounds coeluting with benzene provide serious interference.


A sampling method using a standard glass fiber filter with a backup selection of Amberlite XAD-2 is described. Recovery of polycyclic aromatic hydrocarbons (PAH) was 90-100% with 2 methods of description. The method was evaluated at a coke, an aluminum and a creosote-impregnating plant. The system was also evaluated for analysis of chain-saw exhaust gases; they contained 75mg/m³ polycyclic aromatic hydrocarbons (<0.005 mg/m³ benz[a]pyrene).


All new cases reported in Denmark, Finland and Sweden in 1977 were collected from national cancer registers and hospital records. All were carried out with consenting survivors, who were matched with patients with gastrointestinal cancer. Nasal and sinonasal cancers were associated with: hardwood or mixed wood dust; softwood dust alone; chromium; nickel; welding, flame-cutting and soldering; lacquers and paints (exposure often together with wood dust). Hardwood dust exposure was associated with adenocarcinoma, softwood with epidermoid and anaplastic carcinoma. Agricultural chemicals, textile dust, asbestos, quartz, organic solvents and leather gave no associations. Formaldehyde was equally represented between the 2 groups.


The adsorption characteristics of a packed bed of carbon granules were determined under dynamic flow conditions for carbon tetrachloride, chloroform and benzene, and for binary mixtures of vapours of these compounds. The adsorption space occupied by each vapour was proportional to its mole fraction in the mixture. The diminished effectiveness of the carbon for one vapour due to the presence of another was quantitatively predicted for binary mixtures by applying this finding to previously established adsorption relationships.


48 exposed (mean atmospheric concentration 256mg/m³) and 47 unexposed controls at 2 sawmills were studied. Dyspnoea and tightness of the chest were significantly increased in the exposed subjects. Forced expiratory volume was reduced, and closing volume and slope of the alveolar plateau (phase III) on single breath nitrogen washout were increased on Monday morning before exposure. There was no correlation between length of exposure and lung function impairment. A day of exposure to terpenes did not further change the lung function findings. An additive effect of smoking and exposure to terpenes was suggested.


Comparative tests were done with activated carbon, a molecular sieve and silica gel, on dynamic atmospheres of known concentration. Activated carbon was the most appropriate adsorbent; carbon disulfide was used for desorption, which was practically complete. The precision and accuracy of the method, including sampling, were determined. The method presents great advantages over those currently used and was confirmed in field studies at a butane-cylinder filling plant.


Questionnaires were sent to 36 men with diagnoses of cancer of the nose or paranasal sinuses and 180 control subjects. The odds ratio associated with exposure to wood dust was 5.4 for all carcinomas and 89.7 for mucinous adenocarcinoma. Median duration of exposure was 40 years.


In a search for precancerous lesions, nasal biopsies were examined histologically in 113 furniture workers and 54 controls. Epithelial findings were classified into 5 groups, and a histological score established on that basis. Nasal stem and mechanical wood preparation were significantly related to the histological findings. There were 14 (12%) cases of dysplasia in the furniture workers, against 1 (2%) among the controls. Nasal epithelial dysplasia may be of significance in the pathogenesis of nasal adenocarcinoma. Standard nasal biopsies appear to be valuable in identifying groups of persons with an increased incidence of nasal carcinoma. Discussion in the light of the literature.


Polycyclic aromatic hydrocarbons (PAH) in workplace air are collected with standard glass fiber filters having back-up sections of Amberlite XAD-2. Collecting material is desorbed from the filters and resin with solvents, and the solvent solution is analysed directly by high-pressure liquid chromatography with fluorometric detection. PAH recovery was 80-100%. 16 common PAH were readily distinguishable on chromatograms. Detection limits ranged from 200pg for naphthalene down to 5pg for anthracene and benzo(a)pyrene. The method was successfully tested in coke, aluminum and creosote-impregnating plants.

**CIS 84-402** Sampling and analysis of gaseous organic pollutants - Methods used by INRS (Prélèvement et analyse de polluants organiques gazeux - Méthodes utilisées par l’INRS). Cahiers de notes documentaires - Sécurité et hygiène du travail, 1st quarter 1984, No.114, Note No.1477-114-84, p.55-61. 1 ref. (In French)

This method consists of sampling on a solid sorbent (activated charcoal or silica gel), desorption into liquid and gas chromatographic analysis. Equipment, sampling and analytical methods are described. 2 tables provide important information: the first lists for each of approx. 150 common chemical contaminants: sampling sorbent used, the desorbing liquid, chromatographic conditions, internal standards, yields; the 2nd table indicates the adsorption capacity of activated charcoal with respect to various industrial products.


A survey of wood types used industrially in Italy, with indications of health hazards due to exposure to wood dust of various kinds: irritation of skin and the mucous membranes; toxic reactions; allergic reactions; possible relation with cancer (Hodgkin’s disease, nasal cancer). Suggested measures: reduction of wood dust level in the workplace; prevention of mould growth; early diagnosis of workers developing allergies and tumours, and replacing such workers from the dusty environment; recognition of diseases due to wood dust as occupational in origin.


Sulfur compound concentrations were measured in the air of 4 pulp mills using the sulfite digestion process, and in 6 using the sulfite process. The compounds measured were hydrogen sulfide, methyl mercaptan, dimethyl sulfide and dimethyl disulfide. In sulfite mills the concentration of sulfur dioxide was also measured. Between 100 and 160 air samples were taken in each mill. Analysis was by a gas chromatograph equipped with a flame photometer. The highest concentrations of sulfur compounds were those of sulfur dioxide in sulfite process mills, and those of methyl mercaptan and dimethyl sulfide in sulfite process mills. They often exceeded the TLVs.
Sulfur compound concentration by location in the mills is analysed. Maintenance of the concentration/TLV relation was investigated. Possible errors in evaluation of the reliability of the determination was assumed to be 95%. When several activated carbon, silica gel, alkaline and neutral alumina adsorbents were installed in parallel. While one of the adsorbers retains the acrylic vapours, the other one is heated to desorb and recuperate the acrylic compounds.

CIS 83-1223 Evaluation of the reliability of the sampling device. The diffusion sampler can be used to sample benzene, toluene, n-octane, etc. on activated charcoal for 8h without use of a pump. When used in the breathing zone it is intended for personal monitoring. Adsorbed substances are analysed by gas chromatography. Information is given on field of use, instrument operation, measurement range, effect of microclimate, sampling, analysis and calculation of mean concentration.


Toluene exposure was determined by personal sampler (100 persons) and environmental measurements, and working conditions were investigated by questionnaire. Levels of exposure to toluene were: finishing - peripheral working, rough working-intermediate working. Environmental measurement alone may underestimate exposure for peripheral and rough workers. The quantity of paint used can serve as an indication of toluene exposure. Measurement by personal sampler proved to be very useful.


A test device simulating the breathing of a moderately exercising human during exposure when the masks contained no carbon. These effects were reduced when masks containing carbon were worn. The masks were tolerated well and may be beneficial in protecting sensitive people from O₃ exposures.

CIS 83-1233 Health effects of wood dust - relevance for an occupational standard. Whitehead L.W. American Industrial Hygiene Association Journal, Sep. 1982, Vol.43, No.9, p.674-678. 35 ref. (In English)

Reports on health effects of wood dust are reviewed and available information relating exposure levels to effects is summarised. Case reports exist of skin reactions, obstructive respiratory changes of hypersensitivity or irritant origin, non-allergic obstructive respiratory effects, adenocarcinoma of the nasal sinuses and, less consistently, other cancers. A standard of 2mg/m³ total airborne wood dust, not differentiated by type of wood, is proposed for protection against observed effects for extreme allergic hypsersensitivity.

CIS 83-1014 Flowrate associated variation in air sampling of low concentrations of benzene in charcoal tubes. Levine M.S., Schneider M. American Industrial Hygiene Association Journal, June 1982, Vol.43, No.6, p.423-426. Illus. 14 ref. (In English)

The relative recovery of low-level atmospheric benzene vapour from standard activated charcoal sampling tubes was studied as a function of sampling rate, vapour concentration, and sample quantity. There were significant losses at the lower flowrates; losses due to variations in tube loading and vapour concentration were insignificant.


This diffusion sampler can be used to sample benzene, toluene, n-octane, etc. on activated charcoal for 8h without use of a pump. When used in the breathing zone it is intended for personal monitoring. Adsorbed substances are analysed by gas chromatography. Information is given on field of use, instrument operation, measurement range, effect of microclimate, sampling, analysis and calculation of mean concentration.
A solid sorbent tube containing an inhibited carbon preceded by calcium sulfate (CaSO₄) drying agent allows for the collection of environmental air samples at ≤0.1 ml flow rates at 1/1015. Samples of vinyl acetate (VA) can be stored ≤10 days without loss of monomer. Analytical sensitivity of the method via gas chromatograph/flame ionisation detection is 1.33ng/ml. Validation of the method by TLC, gas chromatography, and GC/MS showed >99% recovery of known amounts of VA generated through a dynamic dilution system at both high and low relative humidities. Breakthrough did not occur until 5-60% even at high relative humidity. No VA was retained by the CaSO₄, which eliminated the effect of moisture on the monomer. Inhibiting the carbon prevented polymerisation of the monomer after collection and during storage.


Proceedings of the 5th Symposium held within the framework of Swedish-Yugoslav cooperation in the field of occupational health. Papers presented include: lung physiology studies on groups exposed to asbestos; chronic form of allergic alveolitis in the tobacco industry; spirometric effects of asbestos exposure, asbestosis and smoking; occupational asthma in woodworkers; cancer morbidity in workers exposed to cutting-oil mists; pulmonary function in quartz dust exposed workers; physiological changes in the lung after exposure to dichloromethane; clinical symptoms and lung function following exposure to aerosols given off during timber sawing; hepatotoxicity of organic solvents in the paint industry; provocation testing in the diagnosis of bronchial asthma of occupational origin; symptoms and spirometry in aluminium, stainless steel and railway track wearers; sensitivity to allergens in tea and coffee workers; health changes in house painters.


Report of an epidemiological survey of nasal cancers registered in England and Wales in 1963-1967 to determine the occupational history of the patients and their smoking and snuffing habits. Data were collected by postal survey of the patient's previous occupation. In 104 cases, interviews were carried out to obtain more precise information on the nature of the job or the type of dust the worker might have been exposed to. The survey confirmed the high incidence of nasal cancer in cabinet makers and wood machinists, no significant increase in incidence in carpenters and joiners, increases in boot and shoe operatives and repairers, and in nickel smelters. The significant excess of cases found among coalminers, gas, coke and chemical industry furnacemen, and foundry furnacemen and labourers may be associated with coal and coke dust exposure. No excess incidence was found among textile workers. Study of nasal tumour histology generally showed adenocarcinoma with no association between histological type and occupation, except in the well-known relation between adenocarcinoma and furniture and footware industry work.


The Porton Down diffusive sampler was calibrated for 8 organic vapours. The results are compared with theoretical calculations of the rate of diffusive uptake. Diffusive uptake is affected by ambient air velocity,0.1ms⁻¹ a value exceeded in most personal sampling situations, and also by the capacity of the charcoal cloth adsorber. A procedure is described which estimates the time of onset of saturation under given conditions of vapour concentration and ambient humidity; the results are compared with laboratory calibrations of the samplers. Under appropriate conditions in the field this sampler gives valid results.


Description of the method (sampling, methylation, standard solutions, recovery after gas chromatography), results and applications. The butyltin compounds sampled on Chromosorb 102 were detected with HCl-containing diethyl ether and converted to the corresponding methyl derivatives with magnesium chloride. The methyl derivatives were determined by gas chromatography with a tin-specific flame photometric detector. The method was used for air analyses in rooms treated with butyltin compounds.

CIS 82-1303 Validation of a recommended approach to recirculation of industrial exhaust air. Volume II. Bullock L.F. DHEW (NIOSH)

Publication No.79-1438, National Institute for Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, Ohio 45226, USA, Aug. 1979. 159p. Illus. 18 ref. (In English)

The validity of the approach recommended in DHEW/NIOSH Publication No. 78-124 (CIS 79-85) was evaluated by studying its application in 4 plants with newly installed exhaust air recirculation systems. The plants were a lead battery assembly operation, a woodworking operation, a wet grinding process, and an enamel blending process. Conclusions concerning the reliability of the approach are presented in a probabilistic search. The recommended approach provided a useful method for examining the feasibility of recirculating exhaust air.

CIS 82-1114 Anosmia of occupational origin (Les anosies d'origine professionnelle). Regnier V. Université de Paris VI, Faculté de médecine Pitité-Salpêtrière, Paris, France, 1982. 71p. 70 ref. (In French)

This medical thesis covers: anatomical and physiological review of the sense of smell, means of investigation and main causes of impaired sense of smell; survey of forms of persistent loss of smell of post-traumatic occupational origin (following a trauma to the face) or due to toxic exposure (heavy metals, solvent, sugar dust, flour, tobacco and wood). Analysis of causes of partial loss of sense of smell due to olfactory fatigue; difficulties of differential diagnosis and medicolegal aspects. The occupational physician's job is to detect, at the pre-employment medical examinations, sense of smell disorders and "spontaneous olfactory scotomas", and to monitor olfactory function in workers exposed to substances suspected of toxicity.


After an activated carbon was characterised with carbon tetrachloride reference vapour, gas adsorption kinetic equations were used to predict carbon performance for 31 carcinogenic vapours. Experimental and calculated adsorption capacity and adsorption rate constant values were compared for benzene, chloroform, dioxane, acrylonitrile and 1,2-dichloroethane. Previous work, and these comparisons, show that predicted and experimental values correspond within a range of ±15%.


A follow up study, for the period 1969-1973, was carried out to determine the incidence of cancer in 5,371 men employed in furniture factories for an average of 19 years up to 1968. The incidence of nasal adenocarcinoma was about 100 times that expected in the local population, and there was a significant relation between increasing incidence of the tumour and increasing dustiness of work within the cohort. No evidence for an increased risk of cancer of any other site was found. An increased incidence of mortality due to bronchial cancer was found when comparisons were made between men exposed to different levels of dust. The trend was not due to differences in smoking habits among the groups of men. No increasing incidence or mortality of other sites of cancer with increasing dustiness was found.


A cross-sectional survey of 1,157 woodworkers was conducted to determine respiratory impairment resulting from exposure to various levels of maple and pine dust. Prevalence of reduced pulmonary function was ascertained using prediction equations for forced vital capacity (FVC), FEV₁, FEF₂⁵-₇⁵ and maximal mid-expiratory flow rate (FEE₂⁵-₇⁵). Adjustments were made for age, smoking status, race. The results were further used in evaluating the health status of workers employed in exposure levels of hardwood and softwood dusts and reduced pulmonary flow rates. The odds ratios for reduced pulmonary function, comparing low and high hardwood dust exposure, were 3.12 for FVE, FEF₂⁵-₇⁵ and 2.14 for FEE₂⁵-₇⁵. Comparing low and medium hardwood exposure, the odds ratios were 2.61 and 2.17, respectively. Comparison of low and high softwood dust exposure yielded odds ratios 4.03 and 2.94, respectively. These ratios were statistically significant.


Contents: importance of atmospheric pollution control; dust sources in the construction materials industry; occupational health, safety and hygiene problems; methods of airborne dust measurement; principles of air pollution control; methods of airborne dust control in the construction materials industry; airborne dust control in the construction materials industry.

31
Istituto del legno, Contributi scientifico-pratici per una migliore conoscenza ed utilizzazione del legno, XXVII, Firenze, Italy, 1980, p.5-64. 183 ref. (In Italian)

Aspects discussed are: pharmacological action; skin effects; respiratory effects (allergic orchiolinitis, bronchial asthma, chronic bronchitic changes, extrinsic allergic alveolitis, tumours of the nose and paranasal sinuses); diagnostic problems; literature review; chemistry of woods, nomenclature problems. It is suggested that wood vapours be classified according to its effects, i.e. poisonous or allergenic; biologically active; biologically inactive or neutral. Dust levels should not exceed 5mg/m³, and exposure limits should be set for respiratory allergens. The use of woods known to be harmful to man, such as Mansonia altissima, should be limited in the greatest measure. (53498)


A case of asthma in a carpenter diagnosed by the bronchial provocation test is presented. It is suggested that the test can rapidly identify dust giving rise to allergic asthma. (53428)


In a first phase, in-depth gravimetric analysis was done on an industrial paint spray mist. Pilot studies were performed with dusts of wood, grain, cellulose, Portland cement and perlite, welding fumes, and chromic acid mist with 37mm, 3-piece filter cassettes of both types. Except for cellulose dust, concentrations obtained with “open-face” filter cassettes were consis­tently higher than with “closed-face” cassettes having a 4mm inlet diameter. The latter, the commonly used method, might be size-selective against large particles, leading to an underestimation of total exposure. “Open-face” filter cassettes should be used for all total aerosol sampling. (53412)


Results of a medical-occupational questionnaire, spirometry, chest radiographs, and environmental monitoring are reported for 1825 workers, divided into 6 groups; those exposed to gases, vapours, and chemicals in the Kraft mill; wood dust; paper dust; CO; various air contaminants; controls. There was no increased prevalence of respiratory symptoms and pulmonary func­tion abnormalities in workers exposed to gases and chemicals. Workers exposed to wood dust had slightly lower pulmonary function than the other groups. Cigarette and alcohol consumption both affected pulmonary func­tion. Environmental concentrations of sulfur dioxide, hydrogen sulfide, and chlorine were low. (54716)


95 cases (25 of respiratory cancer and 70 of digestive tract cancer) and 370 controls were studied. There was a 4-fold excess of respiratory cancer, other than nasal cancer, particularly in furniture workers. There was no definite excess of digestive tract cancer. (53424)


This book, written by a variety of contributors, contains guidance for physi­cians on: exercise-induced asthma: meatworkers' asthma - clinical and pathognathetic observations; byssinosis - occupational lung disease in textile workers; radiographic findings in asthmatic patients; occupational asthma due to western red cedar (Thuja plicata); allergic manifestations due to dusts; neumoniosis; bakers' asthma; asphyxial obstruction in workers exposed to vinyl chloride and polyvinyl chloride; allergic disease in detergent workers; occupational asthma in laboratory animal workers; hoya (seas­quirt) asthma (in oyster farm workers); different aspects of occupational asthma in Japan; allergy due to pharmacological dust; farmer's lung disease and bagassosi: hypersensitivity to porcine trypsin; asthma provoked by castor-bean dust; asthma caused by fumes from pine resin and epoxy resin systems; immunologic and non-immunologic pulmonary abnormalities in drug abuse; allergenic occupational air pollutants. (54813)


Study to determine possibilities of reducing airborne formaldehyde (F) by different ventilation systems in 3 particle board plants (PBP), 2 plywood plants and one coating plant. Ventilation was analysed by mapping airflow patterns and measuring ventilation rate, F concentrations and thermal climate. tracer technique was used to investigate the spreading routes of F. PBP had higher F concentrations than the plywood and coating plants, in spite of more forced ventilation. Significant differences in airflow (general ventilation, exhaust hoods) were observed in 3 PBP. At a ventilation rate of 20h⁻¹, F concentration was below 1cm³/m³, it was 2x higher in PBP having an air exchange rate of 10h⁻¹. Recirculation of exhaust air was common in PBP. F concentrations could be lowered by more efficient enclosure and local exhaust ventilation. The amount of free F in urea-formaldehyde resin (UFR) used in the PBP has a significant influence on F concentrations. Release of F from phenol-formaldehyde resin was smaller than that from UFR. (56218)

CIS 81-664 Health effects of wood dust (Patologia dovuta a polvere di legno). Innocenti A., Del Monaco S. Consiglio nazionale delle ricerche, etc.; modern dust control methods (health engineering, methods to reduce dust formation, water spraying, foam application, enclosure and exhaust ventilation, calculation of air-flow rate required for exhaust ventilation, removal of deposited dust by exhaust ventilation, practical examples); dust collectors; economic aspects. (57327)

13 cases of adenocarcinoma were recorded. Of the 11 cases traced, 3 were in woodworkers with considerable exposure to wood dust, and 7 were in shoemakers, mostly tanneries. The association with occupation was statistically significant. (33055)


These relations were studied in 344 red cedar sawmill workers, 202 workers in other sawmills, 467 grain elevator workers, and 118 municipal service workers. All of the current smokers had higher serum α1-antitrypsin concentrations than non-smokers. There was a significant relationship between duration of employment and α1-antitrypsin concentrations only in the non-cedar worker category. Smoking and industrial dust exposure may influence serum α1-antitrypsin concentrations. (31914)


The CO concentration during felling of a tree (60s) by chain saw in pits (1.5 x 1.5m) dug in the snow to various depths was 112ppm CO at a depth of 0.3m (15ppm in the absence of snow). The configuration of the pit dug around the tree plays a role in exhaustion of exhaust gases. (33042)


A prospective case-control study launched in Denmark, Finland, Norway and Sweden, to single out occupations and exposures associated with nasal cancer, is announced. The estimated duration of data collection will be 2 years. Brief data are given from a survey in Sweden (1960-1972: 44 cases, 50% in joiners). (34075)


The papermaking process is outlined. Air samples were taken at various locations of 3 paper mills and analysed for contaminants. Findings in the chipper, digester house, bleach liquor preparation and bleaching plants, tanc handling, black liquor recovery plant, lime handling, and boiler house are discussed. Harmful exposures (often many times the TLV) to wood and bamboo dust, chlorite gas, mercapton (offensive odour), talc dust, caustic lime dust, sodium sulfate and coal dust are documented. (33334)


An accident in a paper mill is described in which 5 workers were acutely exposed to very high concentrations of sulfur dioxide, when the SO2 valve of a digester where they were doing maintenance work was turned on. The 2 with the highest exposure died immediately. Histological examination of the lungs revealed extensive sloughing of the mucosa of large and small airways and haemorrhagic alveolar oedema. One survivor developed symptomatic severe airway obstruction unresponsive to bronchodilators; another developed asymptomatic mild obstructive and restrictive disease; the third was asymptomatic and had normal pulmonary function tests. The need to monitor pulmonary function in SO2 poisoning is stressed. (32303)


226 workers in the woodworking industry were studied. Except for 4 workplaces employing 23 workers, maximum permissible concentrations for wood dust and formaldehyde were not exceeded. Chronic inflammatory changes of various degrees, especially of the nasal mucosa, were found in 17 workers, and chronic asthmatic illness of 2 workers. Clinical symptoms such as rhinorrhea, nasal obstruction, sneezing, decreased taste, x-ray and cytotoxic and other studies. Malignomas of the nasal sinuses were not detected. (33068)


When respirous timber is sawn, mixed terpine fumes are produced. Timber that had been stored in water caused a high frequency of chronic bronchitis and did not show a correlation with spirometric values. While spirometric values were similar, hard wood only showed any respiratory symptoms occurred with timber that had been stored on land. Subjective symptoms appear to be due to compounds formed in water-stored timber that evaporate during sawing. (32843)


On account of accidents that have shown up the difficulties of assessing activated carbon filters, some general laws are presented permitting evaluation of their hazards. The relations between the properties of the activated carbon and the solvent are considered in order to establish a basis for the possible service life of the filter. The hazard of filter apparatus is dealt with in relation to filter saturation, taking studies with carbon disulphide as example. To reduce the risk, the use of a hose-type respirator, attachment of the filter to the back, and renewal of the filter after each use are recommended. (32373)


Description of a case of extrinsic allergic alveolitis with acute crises. Diagnosis was reached by occupational anamnesis (exposure to mouldy wood), clinical picture and results of physiological and X-ray examinations. Microbiological analysis of the workplace showed the presence of considerable quantities of spores, in particular Aspergillus and Thermactomycnos vulgaris. The patient’s serum contained precipitins against Thermactomycnos vulgaris and Aspergillus fumigatus. (31729)


Report of an investigation involving a group of 100 workers exposed to dust dust, and an equal number of controls. The survey covered: clinical history, medical examination, chest X-ray, ECG, spirometry (vital capacity, FEV1, Tiffenau index) smoking habits. The following types of dust were considered: metal and vegetable dust, wood, rubber, asbestos and silica dust. The results are given in detailed tables. The following disorders were observed in the exposed group: significantly raised level of ECG changes, signs of lung disease, spirometric changes (potentiating effect of tobacco smoking). (32405)


217 men studied in 1963 were followed up 10 years later. There was no increased mortality nor increased specific cause of death. 200 men still living showed no differences in respiratory symptoms or prevalence of chronic non-specific respiratory disease. Exposure to chlorine or sulfur dioxide appeared to have a slight adverse effect on pulmonary function. (32018)


Fire safety and housekeeping requirements in woodworking shops necessitates the installation of efficient exhaust systems for sawdust removal. This booklet reviews the basic aspects of air hydraulics and examines the present day state of the art regarding various exhaust ventilation systems for the removal of sawdust and wood chips, and their performance (fans, exhaust ducts and hoods, dust collectors). A section devoted to storage bins considers fire hazards in the industry and arching of bulk materials. Other chapters deal with exhaust ventilation systems (with concrete examples) and equipment required for exhaust removal of small-size particles. (31735)
The incidence of red cedar asthma was 1.1%. Part II discusses the influence of factors such as duration of exposure, atopy and a-1-antitrypsin phenotype. Prevalence of chest symptoms increased and pulmonary function changes, but was commoner in workers with conjunctivitis and rhinitis, a-1-Antitrypsin phenotype did not.

A case history of "sequoiosis" is reported, with results of provocation tests, which produced a specific late asthmatic reaction. It is suggested that Thuya plicata had ceased for more than a year.

CIS 78-1385 Asthma due to dust from redwood.. DoPico G.A. Chest, Park Ridge, USA, Mar. 1978, Vol.73, No.3, p.424-425. 8 ref. (In (English))

A case history of "sequoiosis" is reported, with results of provocation tests, which produced a specific late asthmatic reaction. It is suggested that phenolic extractives (e.g. sugiresinol, hydroxysugiresinol and isosequiric acid) in the redwood may be responsible for the respiratory reaction. The mechanism by which redwood dust induces asthma is unknown.


Specific immunotherapy was performed in 20 dust-sensitised woodworkers. Diagnosis was based on clinical data on and off work and direct skin tests. Therapy was evaluated on a basis of the various tests, and the results were promising.

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Main aspects covered: affected workplaces (sawmills, carpentry shops, furniture and prefabricated materials factories, board industries, etc.); problematic processes (above all trimming/grading); hazards of natural and artificial adjuncts; use of tropical woods; subjective discomfort; prevalence of respiratory tract symptoms; standardisation of exposure limits; ventilation.


Epidemiologic surveys were carried out in 1,138 white men employed in sawmills and grain elevator terminals in British Columbia (Canada). In addition to the administration of an occupational health questionnaire and spirometry, Pi phenotype and the concentration of serum α1-antitrypsin were determined. Most of the workers (88.8%) had the Pi M phenotype, 8.0% the MS phenotype, 2.7% the MZ phenotype and 0.4% had other phenotypes. No differences were found among the 3 major phenotypes in the prevalence of chest symptoms and lung function abnormalities, even among cigarette smokers. Workers having the MZ phenotype with intermediate α1-antitrypsin deficiency were not particularly susceptible to the development of chronic obstructive lung disease under the conditions prevailing in these industries.

CIS 78-2055 Specific immunotherapy against woods (La immunoterapia specifica contro essenze di legno).. Nava C, Briatico-Vangosa G., Brambilla G., Marchisio M. Medicina del lavoro, Milano, Italy, June 1978, Vol.69, No.3, Supplement, p.463-470. 25 ref. (In (Italian))

Specific immunotherapy was performed in 20 dust-sensitised woodworkers. Diagnosis was based on clinical data on and off work and direct skin tests. Therapy was evaluated on a basis of the various tests, and the results were promising.


At the time of survey, exposure to Thuja plicata had ceased for more than 6 months: 27 of the 38 patients observed became asymptomatic, with normal lung function (group A); 3 had persistent chronic bronchitis with a moderate degree of airway obstruction, probably as a result of cigarette smoking (group B1); 8 continued to have recurrent attacks of asthma that disappeared in severity after cessation of exposure, and their symptoms were probably due to previous exposure (group B2). The effect of breathing helium on maximal expiratory flow at 50% of the vital capacity MEF 50 was studied. All except one patient in group A were responders (change in MEF 50 greater than 30%); 2 patients in group B1 and 2 in group B2 were non-responders, suggesting obstruction in the small airways. All patients with red cedar asthma demonstrated bronchial hyperreactivity to methacholine to the same extent as patients with non-occupational asthma. This hyperreactivity persisted after they left exposure, irrespective of symptoms. It is not known whether bronchial hyperreactivity is the predisposing factor in occupational asthma or is the result of the disease.

CIS 78-671 Allergic respiratory disorders due to wood dust (Allergie respiratoires aux poussieres de bois).. Surber R., Guberman M., Girard J.P. Revue française de Pneumologie et d'Immunologie Clinique, Paris, France, 1977, Vol.47, No.4, p.159-161. 19 ref. (In (French))

Description of the clinical and immunological aspects of 4 case studies of allergic respiratory disorders due to wood dust, followed by a report on an epidemiological survey, in 96 workers exposed daily (joinery and furniture making, carpentry, parquet floor laying), of clinical symptoms possibly due to working with wood. The results show the frequency of nasal (56%) and ocular (16%) lesions. Some types of wood (mansonia altissima, mahogany, tropical cherry mahogany, Brazilian rosewood) seemed to give rise to allergic disorders more frequently than others. Factory dust and sawdust, moulds of the "Aspergillus" group and griseses were also frequently implicated. This survey shows that patch tests are inadequate for distinguishing between an irritative phenomenon and an allergic pathogenesis.


Tonoko is a very fine mineral powder used widely in Japan to treat the surface of traditional wood furniture. Three cases of pneumoconiosis following more than 10 years’ exposure are reported. There were few clinical symptoms, though chest X-rays showed chemical nodulations throughout the pulmonary fields. One case was complicated by acute pulmonary tuberculosis. Analysis of the powder showed a quartz content of ca. 50%.

CIS 77-2061 Nasal cancers, symptoms and upper airway function in woodworkers.. Andersen H.C., Andersen I., Solgaard J. British Journal of Industrial Medicine, London, United Kingdom, Aug. 1977, Vol.34, No.3, p.201-207. Illus. 15 ref. (In (English))

Report on studies in 1965-1974 on the incidence of nasal cancers in relation to occupation, and on airway symptoms, nasal mucociliary flow and airway resistance in these workers. Hospital case records were reviewed and 68 workers at 8 furniture manufacturing plants studied. In all, 186 cases of nasal cancer were diagnosed, including 157 ectodermal tumours (22 in woodworkers). Dust concentrations at the plants were above the TLV of 5mg/m^3 in 63% of cases, and more than twice the TLV in 28%. Middle-ear inflammation and common colds were more frequent at high dust concentrations, and the incidence of nasal mucostasis was proportional to wood dust levels.


Case report of inhalational disease caused by wood dust in a worker handling Ramin. Transient airways obstruction was associated with reduction in the diffusing capacity of the lungs. The clinical syndrome was consistent with extrinsic allergic alveolitis (EAA). Ramin is a further example of an organic dust that can cause EAA.


In the study reported in Part V, the effective service life (breakthrough time) of organic vapour respirator cartridges was tested with 121 solvent vapours (aromatics, alcohols, acetates, alkanes, ketones, amines, and chlorinated materials), at a solvent concentration of 1,000ppm. Detailed results are given. In general, the activated carbon had greater affinity for the less volatile materials; the higher the boiling point of the solvent, the greater the quantity adsorbed; water vapour decreased the amount of volatile or water-soluble vapours adsorbed. In Part VI, 4 types of cartridge (coconut or petroleum activated carbon) were tested with acetone, benzene, carbon tetrachloride, dichloromethane, diethylamine, hexane, isopropanol, methyl acetate and methy1chlorofrom and with vinyl chloride at concentrations of 50-3,000ppm. Detailed results and a general equation are given. Breakthrough times were always longer at lower concentrations. For vinyl chloride, full protection was afforded only for a comparatively short time even at concentrations below 100ppm.
3.3. Wood preservatives

CIS 87-957 Paints, varnishes, adhesives. Arbetsmiljofonden, Box 1122, S-111 81 Stockholm, Sweden, 1987. 46p. (In English)

This booklet is a summary of the report of a working group on research and development needs for a programme to improve working conditions in Swedish woodworking industries, and was prepared by the Standing Committee for the Building and Woodworking Industries, shipbuilding, construction, woodworking, and adhesives industries and the methods of application and materials used in the industries. The full report is available in Swedish under the title "Färg, Lack, Lim". (48669)


These recommendations, adopted 1 Mar. and 20 June 1985, establish safety measures to be taken in the use of wood treatments (labelling, storage, transfer between containers, wood treatment in the open air and indoors, personal protective equipment). Commentaries. (48668)


This practical guide is addressed to worksite supervisors, foremen and team leaders. Aspects discussed: main constituents of wood preservatives; uses; application; hazards; preventive measures during storage, and before and during application. (48638)


Code of practice on the use of chlorophenols and chlorophenates for protecting lumber against fungi in specialised undertakings in British Columbia, Canada. Aspects covered: the need for wood protection; hazards of chlorophenols and chlorophenates; personnel protection; general practices at wood protection facilities; recommended design features and operating practices; transportation of treated materials; disposal of wastes; summary of legislation. (48637)


Personal exposure to chlorophenol (CP) was measured in 10 Finnish sawmills where a chlorophenol salt formulation was used for the blue stain control in the production of the wood treated in air were below 0.5mg/m² exposure limit. However, some workers had high CP levels in their urine, indicating a high skin adsorption rate from contact with the CP solutions. CP was also observed by breathing wood dust contaminated with the chemical. The risks associated with impurity contained in CP preparations (chlorinated dibenzoxazins and dibenzfurans) and the need for epidemiologic studies on possible cancer risks in sawmill work are discussed. (43850)

CIS 84-1956 Persistence of tetrachlorophenol and pentachlorophenol in exposed woodworkers. Kailman D.A., Horstman S.W. Journal of Toxicology - Clinical Toxicology, 1983, Vol.20, No.4, p.343-352. Illus. 11 ref. (In English)

The decline in urinary concentrations of pentachlorophenol (PCP) and 2,3,4,6-tetrachlorophenol (TCP) was monitored in a group of 40 woodworkers during two successive annual 16-day vacation periods. Samples were taken on the last working day prior to shutdown and on the first day after the shutdown. Among workers with the highest pre-shutdown levels, uniform TCP reductions of 90-96% were observed, indicating elimination rates similar to those reported for TCP in a single-dose human exposure study. In 2 of 4 workers with significant pre-shutdown levels, sampled on alternate days during the shutdown, the declines in urine TCP were consistent with a simple one-compartment first order decay. The possible effect of environmental TCP exposure on observed biological decay rates, when occupational TCP exposures are low, was indicated by a wide variation in urine TCP reduction and slight decreases or actual increases observed during the shutdown period. (42942)


Creosote, a mixture of liquid and solid hydrocarbons used as a wood preserver, was tested positive for mutagenicity. Rats experimentally exposed (by intraperitoneal injection) to creosote also had mutagenic substances in their urine. No mutagenicity was found in the urine of workers occupationally exposed to creosote. (42775)


Industrial hygiene surveys were conducted at 11 wood treatment plants and 2 manufacturing facilities to determine worker exposure to wood preservative chemicals, airborne concentrations of these chemicals and the effectiveness of wood practices and other control methods. Exposures during wood treatment were below the current applicable occupational standards. Short-term peak exposures occurred during tasks such as cylinder opening and unloading and when filling non-pressure tanks with hot pentachlorophenol oil solutions or during inspection and sampling of treated wood. Exposure levels were all below current guidelines for significant health risk. Recommendations are made for minimising worker exposure during emergency spills and for personal protective equipment, modified wood practices and medical surveillance programmes. (48481)

CIS 84-1033 Fungicide-induced contact dermatitis. Johnsson M., Buhanen M., Loira H.L., Solvang S. Contact Dermatitis, July 1983, Vol.9, No.4, p.265-268. Illus. 7 ref. (In English)

An epidemic of contact dermatitis in a wood products factory attributed to tetrachloroisophthalonitrile (TCPN) is related. 14 of 20 workers had work-related skin complaints, half of which were of allergic origin. TCPN appears to have strong irritant and allergenic properties. (41917)

CIS 84-1031 Urinary arsenic, chromium, and copper levels in workers exposed to arsenic-based wood preservatives. Takahashi W., Ptenninger K., Wong L. Archives of Environmental Health, July-Aug. 1983, Vol.38, No.4, p.209-214. 18 ref. (In English)

Spot urine samples were collected from 89 wood treaters and 232 control subjects. Wood treaters averaged 103µg/g arsenic compared with 74µg/g in controls; respective figures for chromium were 41 and 63µg/g and for copper 191 and 221µg/g. Mean urinary arsenic levels of the wood treaters were within published normal limits. Urinary arsenic values can provide a useful index of occupational exposure to chromated copper arsenate wood preservatives when statistical adjustments are made for the effects of dietary arsenic. (41915)

CIS 83-1637 Sampling and analysis of pressure-impregnated wood dust - II. Method of selective analysis of As(III) and (V) and determination of Cr, Cu and As in such wood dust (Protvagngh och analys av träimpregneradvirke. II. Metod för selektiv analys av As(III) och As(V) samt bestämning av Cu och As i trädamm). Anderson K., Kragh L., Nilsson C.A., Nygren O., Rehn M. Undersökningssamling 1983:3, Arbetskyddsstyrelsen, Publikationsservice, 171 84 Solna, Sweden, 1983. 13p. 7 ref. (In Swedish)

Contents of this research report: reagents and instruments required; source of dusts; sample preparation (extraction, partition); methods of determination (atomic absorption spectrophotometry). Metal levels detected were 7.0 ± 4.6mg/g chromium, 4.3 ± 1.9mg/g copper and 3.5 ± 1.5mg/g arsenic; all the arsenic was pentavalent. (40992)

CIS 82-761 Toxicity of various solvents used for the chemical treatment of wood (BEF, AKR and liquid putty RME) (O tóxicidade de agentes químicos usados na impregnação de madeira). Arraigato E.J., Smirnova E.S., Štikina M.H., Simonova G.P. Gigiena truda i professional'nye zabolavleniya, Nov. 1980, No.11, p.57-58. (In Russian)

The BEF and AKR solvents, and a liquid putty, are used in the treatment of wood as a building material and in paints and varnishes. They contain ethanol and butanol (up to 60%), ethyl and butyl acetate (30%), methyl acetate (5%), and a mixture of butyl formate, butyl propionate and butyl butyrate (79%), and methyl ethyl ketone (2%). Rats, mice and rabbits exposed to them by inhalation revealed their toxic effects. Intragastric administration to rats produced cumulation coefficients of 0.4 (RME), 1 (BEF) and 1.5 (AKR). Repeated intragastric injection produced irritation of the upper respiratory tract and conjunctivae, and impaired kidney function. (40992)
the number of exposed workers, different control techniques, physical size
The control technology for spray painting and coating processes was
CIS 82-57 An evaluation of engineering control technology for
Application to the skin caused local irritation and absorption; sensitisation
This study on timber impregnated with a wood preservative containing Cr,
Tetrachlorophthalonitrile (TCPN) is one of several products substituted for
chromium(VI) and copper
CIS 81-1607 Sampling and analysis of wood dust from timber
The 27 papers presented at this conference, 16-18 Sep. 1980, Rockville,
treatment of timber in constructions against wood borers and wood-
(Recommandation n°A 3-78 - Traitement de bois par la technique de trempage)..
CIS 79-1639 Recommendation No.A 3-78 - Preventive or curative
treatment of timber in constructions against wood borers and wood-
CIS 81-1970 Chromates symposium 80.
CIS 81-310 Fire retardant impregnated wood and fire retardant
CIS 80-1721 Health hazards due to chemicals used in wood impreg-
Kemiska halsorisker vid träimpregnering - En våtsamtgående f
domande impregneringsmetoder och -medel.. Rosén G., Rudling J. Undersö-
Report of an investigation on exposure to the gases and aerosols given off
during impregnation of wood with preservatives in several Swedish under-
takings, giving the results of measurements of exposure, and observations
antibacterial effect of chromium compounds in man and animals; epidemiologic studies; engineering controls in the manufacture and uses of chromium-containing materials; exposure evaluation and biological monitoring.
This study on timber impregnated with a wood preservative containing Cr,
Tetrachlorophthalonitrile (TCPN) is one of several products substituted for
pentachlorophenol exposure..
CIS 77-2025 Poisoning by pentachlorophenol or its sodium salt in
treatment of wood by soaking (Intoxication au pentachlorophenol ou a
son sel de sodium dans le traitement des bois par la technique de trempage)..
CIS 77-1745 Evaluation and prevention of health hazards in curtain
costing of the workpiece, and the coating systems used. Levels of control in spray
booths, relative to methods of application, and as provided by respiratory
protection were examined for the specific hazards associated with paint
mist, lead, chromium, toxic metals, and organic solvents. Specific control options and recommendations are presented.
36
Annex V of this decision details the hazards of these operations and the precautions to be taken: fire risk (inspection and possible overhaul of the electrical equipment, installation of flame-proof electrical equipment supplied by 12 or 24V, prohibition of smoking, availability of extinguishers, egress ways and ventilation systems, use of the least flammable products, etc.); poisoning risk (notification of operations, storage of recipients containing toxic products in a special place, treatment in the open air or under correctly ventilated shelters, drainage of products into an appropriate container after treatment, personal protective equipment); risk of falls and penetration of ceiling. Annex V is reproduced in Cahiers des comités de prévention du bâtiment et des travaux publics, Paris, France, Jan.-Feb. 1979, No.1, p.20-22.
CIS 78-1613 Chemical hazards in the furniture industry and lost-
time illness (Himljioni vrednosti v mebelna promišlosti in zabeležavost s vremennim notrudnosposobnost.), Jalkov H., Bobev G. Higiena in zdravjevaz-
Results of an occupational hygiene survey in 4 workshops in the furniture
industry. Department of Health and Environment, Ministry of Labour, diving wood preservatives into organic solvents such as toluene, xylene, acetone, ethanol, etc. Only toluene levels exceeded the TLV; the total solvent concentration was however several times higher than the TLV for the mixture. The highest proportion of lost-time illness was seen in the most exposed workers. The most common conditions over 2 years were acute cataract of the upper respiratory tract, complications of pregnancy and neurosis.
CIS 78-178 Association between renal function tests and pen-
tachlorophenol exposure... Begley J., Reichert E.L., Rashad M.N., Klem-
thermometer in a Holzschutzmittel mit neuer Tungziher Wirksubstanz.. Spindeldreier A., Deichmann B. Dermato-
CIS 80-1921 Analysis of three occupational exposure surveys to
TCPN was highly sensitising in normally impregnated timber is greater than 1 at a dust concent­
tration of 1.5mg/m3 (35% of the TLV for wood dust). (36270)
slightly soluble hexavalent Cr. The additive hygienic effect of these sub­
stances in normally impregnated timber is greater than 1 at a dust concentra-
tion of 1.5mg/m3 (35% of the TLV for wood dust).
CIS 81-1091 Contact dermatitis due to a wood preservative con-
taining a new fungicide (Kontaktdermatitis auf ein Holzschutzmittel mit
CIS 81-1970 Chromates symposium 80.
CIS 80-1721 Health hazards due to chemicals used in wood impreg-
CIS 81-310 Fire retardant impregnated wood and fire retardant
costings for building materials 1979.. ANSI/NFPA 703-1979, National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210, USA, 27 Feb. 1980. 9p. 8 ref. (In English)
This standard provides criteria for defining and identifying fire retardant
impregnated wood and fire retardant coated building materials. Sections are devoted to: application, definitions, tests, maintenance of protection, and identification.
CIS 80-8727 Evaluation of engineering control technology for
Application to the skin caused local irritation and absorption; sensitisation
did not occur. Processes using these substances should be enclosed and
the workplace well ventilated.
CIS 80-7921 An evaluation of engineering control technology for
CIS 81-5721 Chemical hazards in the furniture industry and lost-
time illness (Himljioni vrednosti v mebelna promišlosti in zabeležavost s vremennim notrudnosposobnost.), Jalkov H., Bobev G. Higiena in zdravjevaz-
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CIS 78-178 Association between renal function tests and pen-
tachlorophenol exposure... Begley J., Reichert E.L., Rashad M.N., Klem-
thermometer in a Holzschutzmittel mit neuer Tungziher Wirksubstanz.. Spindeldreier A., Deichmann B. Dermato-
CIS 81-1091 Contact dermatitis due to a wood preservative con-
taining a new fungicide (Kontaktdermatitis auf ein Holzschutzmittel mit
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The paper industry uses slime control agents on a large scale. These agents (generally thiocarbamates in solvents such as dimethylformamide), which act against microorganisms and thus prevent formation of slimy plugs or deterioration of the paper, are present in the water vapour released by the paper during manufacture. Swedish research has found ethylenebis(dithiocarbamate) to be carcinogenic and teratogenic, and dimethylformamide teratogenic. Pregnant women should thus not be exposed. Appendices: list of compounds used as slime control agents and their solvents, with the associated health hazards.


Occupational hygiene studies at the trimming, grading and packaging positions of 2 sawmills, with results of chromatographic analysis of 3 commercial chlorophenol formulations and of wood dust. Chemistry and toxicology of chlorophenols. The most frequent impurities of the commercial chlorophenols, which are applied by dipping or spraying, were chlorinated phenoxycyanohexyl ethers, dibenzofuran and dibenzoazidines. Analysis of wood dust showed the impurities to be enriched in relation to the chlorophenols impurities, probably because of their low volatility and high stability. Contaminant concentrations were much higher at the plant employing spraying as method of application; the dipping method is therefore preferable, provided that the highly contaminated sludge from the dipping tank is adequately disposed of.


This loose-leaf collection was published under the auspices of the Substance Control Committee of the German Research Association. It contains basic information on approx. 300 substances (chemicals, gases, fumes, silica, asbestos, man-made mineral fibres, cutting fluids). Supplement 11 had one chapter devoted to passive smoking. Supplement 12 provides additional studies on: aluminium fumes and dust; coal dust; ethylene (update); ammonia (update); 1,4 and 2-butanolsulfone; 2-methyl-4-chlorooxanilide; dichloromethane (update); 3,3'-dimethoxybenzidine; 3,3'-di-methylenebiphenylene; dipropylene glycol monomethyl ether; ethyl acrylate; 2-nitro-p-phenylene-diamine; p-toluol; vinyl chloride; chlorodifluoromethane; 4-amino-2-nitrophenol; xylene.


This guidance note covers the use, handling, storage and transport of chemicals in mills. Discussed are: control measures; organisation; arrangements; chemical manual; strategy for introducing a chemical; collection and assessment of information; application of information to site conditions; consideration of chemicals currently in use; provision of control measures for existing and new chemicals (general considerations, transport, storage, use, disposal, external environment, maintenance of plant, emergency procedures, first aid, personal hygiene, training and information, supervision, maintenance and review of control measures, investigation of accidents etc., health surveillance); strategy for dealing with new information; health and safety awareness: getting the message across; cooperation; involvement; provision of information; education and training; instruction and supervision; sustaining awareness:: glossary; factors affecting risk due to toxic properties or flammability; suppliers’ and internal information sheets; segregation table for storage of classes of chemicals; checklist, personal protective equipment; legal requirements; sources of information.


The cancer incidence of 3,545 workers in the Finnish pulp and paper industry was assessed in a retrospective cohort study. The cohort included workers with continuous employment of at least one year between 1 Jan. 1945 and 31 Dec. 1981 and was followed until 31 Dec. 1980. Six subcohorts were formed (sulfite mill, sulfate mill, paper mill, board mill, maintenance department, and paper plant). Separate analyses were made for the 2,537 workers who had been employed after 1 Jan. 1945. Their smoking habits were surveyed. Among the men, 196 cases of primary cancer were detected versus 203.8 expected and there were 47 cancer cases among the women versus 57.9 expected. Lung cancer occurred in 78 men (62.6 expected) and the excess was most prominent for the male board mill workers (40 observed, 18.1 expected, particularly after 20 years’ latency (25 observed, 7.8 expected). Analogous excesses of lung cancer occurred among the men (especially the male board mill workers) who began work after 1 Jan. 1945. Their findings were not explained by smoking habits.


A cohort of 3,572 workers employed for at least one year between 1945 and 1955 was followed through 31 March 1977. The 915 deaths observed were 79% of the number expected on the basis of comparable US mortality rates. Statistically non-significant excesses of deaths due to lymphosarcoma and reticulosarcoma and to stomach cancer were observed. These findings corroborate reports based on state vital statistics, and preliminary case-referent studies of populations of workers in different industries. No deaths due to nasal cancer were observed, but only 0.5 were expected. The excess risk of lymphosarcoma and reticulosarcoma was increased only for men who worked in sulfate mills. The excess risk of stomach cancer was limited to men who worked in sulfate mills. Process-specific and standardized mortality rates by cause were highest after 20 years since first employment in the mills.


Information note for occupational physicians. Presentation of the standard battery established by the International Contact Dermatitis Research Group (ICDRG). For each of the 22 allergens: generalities; industrial sectors or occupations where exposure occurs; conditions of non-occupational exposure. The allergens: chromium (potassium bichromate), nickel, cobalt, p-phenylenediamine, benzocaine, rubber (4 different mixtures), formaldehyde, epoxy resin, vinyl and derivatives, Peps balsam, lanolin, neomycin, parfumes, parabens, formaldehyde-p-t-butylphenol resin, quaternium 15, prione, ethylenediamine hydrochloride, quinolines. In France, thimerosal and Frullania are added to the list.


Ten of 20 workers in an envelope-making factory developed contact der­matitis. Patch testing showed that the cause was dibutyl maleate ("maleinate"), a component of polyvinyl acetate glues. Dermatitis disappeared from the workforce within 3 months after removal of the dibutyl maleate containing glue from the factory. The glue manufacturer subsequently withdrew dibutyl maleate from its products.


A 45-year-old butcher developed a dermatitis which spread from his fingers to his face. In patch tests, soakcd from the knife handle and an alcoholic extract of the wood gave positive reactions. Although some con­stituents of the wood (Indian palisander, Dalbergia latifolia) are known sensitisers, none of them gave a positive reaction in patch tests. When the patient stopped using the knife, the dermatitis disappeared.


Case study of a non-alcoholic worker occupationally exposed to solvents (toluene, xylen, turpentine and petroleum) who developed symptoms compatible with Zieve syndrome (haemolytic anaemia, hyperlipaemia, liver disease, anorexia, fever). Liver function tests confirmed the diagnosis.

This loose-leaf collection was published under the auspices of the Toxic Substance Control Committee of the German Research Association. It has basic information on 215 industrial substances (gases, fumes), as well as on silica, asbestos, cotton and wood dust, on artificial mineral fibres and on cutting fluids. Supplement 10 contains a study on the formation of nitrosamines in the workplace, and information on iron oxide dust and on 24 other harmful substances: 1,3-butanediol, ethoxybutyl acetate, bis-(2-chloroethyl) ether, diethylamine, disocyanates, dinitrophenol, 2,2-dipropylhexyl mercaptan, 2-ethoxyethyleacetate, ethylamine, ethylene oxide, 2-methoxyethyl acetate, 2-methylpropyl mercaptan, chloromethane, methylvinitole, phosgene, phosphoryl chloride, polyolic aromatic hydrocarbons, trimethyl phosphate, vanadium pentoxide, iron oxide. Each monograph contains toxicologic information, results of observations in man and in animals, and the reasons behind the adopted TLVs.


An occupational health survey of 10 paper mills in Finland revealed concentrations in air varying from 0 to 20ppm H₂S, 0 to 15ppm methyl mercaptan and dimethyl sulfide, 0 to 1.5ppm dimethyl disulfide and up to 20ppm SO₂. The exposed workers complained of headache and a decrease in concentration capacity. Their frequency of sick leave was greater than among a control group. Contaminant concentrations and health problems differed with the types of processes used.


Mortality among 2113 US and Canadian members of the Pulp, Sulfite and Paper Workers' Union, from 1935 to 1964, was studied using a proportionate mortality analysis. The distribution of the data according to location and type of cancer suggests that cancer mortality in pulp and paper workers may be related both to pulp processing and to the tree species processed.


A 27-year old woman experienced pruritus, eye and throat irritation, hoarseness, shortness of breath and fatigue within 30min of exposure to carbonless copy paper. In 2 tests, contact urticaria occurred in the hand holding the paper, and changes in pulmonary function flow-volume loops characteristic of an obliterative obstructive disease were observed. During the second exposure both prostaglandin F₂α and thromboxane B₂ increased substantially, indicating that the symptoms observed were related to prostaglandin release. Similar symptoms were found in 59 workers in a subsequent plant survey.


The 11 materials tested were: surgical rubber, butyl rubber, polyethylene, polyvinyl alcohol (PVA), Saranex-laminated Tyvek, neoprene, nitrile rubber, Viton, Viton SF, Vitri e, Teflon. The 4 challenged solvents were: epichlorohydrin, perchloroethylene, trichloroethylene and 1,2-dibromoethane. Butyl rubber, polyvinyl alcohol (PVA), Saranex-laminated Tyvek, neoprene, nitrile rubber, Viton SF, Vitri e, Teflon. The materials were challenged with undiluted Aroclor 1254, and solutions of Aroclor in trichlorobenzene and paraffin oil. The best resistance was given by nitrile rubber, Viton SF and Vitri e. PVA and Teflon also gave good results but showed loss of other properties such as flexibility, tear resistance or strength.


Conclusions of 5 papers on the subject: Studies in 80 office workers indicated only eye and respiratory tract irritation caused by carbonless copy paper (CP). Papers treated with desensitising ink were statistically associated with skin irritation. 273 paper samples were studied, 190 of which were carbonless paper. Paper containing monoisopropylphenyl was most often associated with symptoms. All monosubstituted and bisubstituted phenyl (SIP) and benzilic acid 2,4-dinitroaniline (BDA), with SIP phenyl were associated with skin irritation. Environmental conditions were studied. No correlations were found between airborne solvent concentrations from CCP and the occurrence of irritating symptoms. Formaldehyde, glutaraldehyde and the organic solvents in which the colour formers are dissolved were studied under standardised conditions. The emission of aldehydes from CCP is too low to cause the irritative symptoms. The highest emission was of kerosene, which could not be related to symptoms. Colour formers in CCP were analysed by thin-layer chromatography. 17 types were isolated. Only 3 were related to symptoms.


Complaints thought to be caused by carbonless copy paper were investigated by toxicological appraisal of the chemical contents of the papers and by skin tests and other examinations of patients. Chemical ingredients vary considerably from one commercially available brand to another, and the complaints could not be traced to any particular brand. No case was found, among the 148 patients examined, in which the handling of carbonless copy paper was directly related to medical problems. Other factors, such as the type of paper, of printer, of ink, etc., are discussed as contributing factors. English translation available from Canadian Centre for Occupational Health and Safety, 250 Main Street E., Hamilton, Ont. L8N 1H6, Canada. (CCOHS translation series, No.127).


The incidence of lung cancer in Finland is among the highest in the world, especially in the rural populations in the east and north. Data on all cases of lung cancer diagnosed in age groups 35-69 years and information on occupation were collected. Compared with the risk in the total active population, the relative risk of those not active (standardised incidence ratio, SIR) was 1.69 for men and 0.86 for women. The SIR was lower than expected in highly educated and white-collar male workers, and sales, transport service and farming workers. High SIRs were found in mining and quarrying, forestry, woodworking (joiners), construction, painting and unskilled workers. The only significant result in women was a lower-than-expected risk in farming. Variation between occupational groups in the prevalence of smoking closely corresponded to variation in the SIR for lung cancer. Occupational exposure to carcinogens is probably of less importance than smoking in the population as a whole.


Patch testing with 3 kinds of rubber gloves and various rubber additives on a subject who had developed allergic contact dermatitis while wearing heavy duty rubber gloves revealed a sensitivity to N-isopropyl-N'-phenyl-phénylenediamine (IPPD). Reactions continued for 2 weeks. Chemical analysis showed that gloves contained IPPD and styrenated (SP) at 177 and 1600μg/g, respectively. Reactivity to styrenated phenol was not tested. The IPPD additive was considered to be the causative agent.


Part I reviews the origin, the chemical production and the uses of colophony. Colophony-derived products include adhesives (adhesive tapes, dressings), inky agents (for printing ink), protective coating materials, glues, insulating substances, waxes, etc. Widespread use of colophony has increased the number of cases of allergy to it, the main identified cause for which is acidic acid or other resin acids. Part II examines the effect of sensitisation to colophony, resin acids and their derivatives. A table presents the results of a literature analysis. Allergic asthma, observed in bakers, is attributed to the colophony present in brazen funnels. Finally, problems with skin tests and recommendations relating to a standard series of colophony varieties are presented.


A dozer driver clearing heaps of birch chips in a large Finnish pulp mill complained of tiredness, headache and feeling sick after exposure to chip dust. Other exposed workers frequently showed similar symptoms and increased body temperature at the end of the shift. The dozer driver’s state exacerbated, and he complained of dry cough and muscle pain. Air samples taken at chip heaps contained high concentrations of chip dust (results are tabulated). Determination of precipitating antibodies in the driver suffering from “chip heap disease” yielded a precipitin titre of 1:8 for Aspergillus fumigatus. It is suggested to improve the ventilation system of the dozer driver cab and to provide it with a filter. If this is not feasible, the driver should wear an air stream helmet.


Synonym, uses, physical and chemical properties, storage, methods of detection and determination in air, fire hazards, pathology and toxicology (animal tests show that it is an irritant; it irritates human skin and mucous membranes - American (ACGIH) TLV: 5ppm). French regulations on occupational health and safety and neighbourhood protection are mentioned, as are French and international transport regulations. Technical and medical recommendations are offered.


Simultaneous administration of ethyl alcohol increased the LD₅₀ of ethylene chlorohydrin (J-chloroethanol, a solvent for cellulose derivatives used in the paper and pharmaceutical industries) regardless of the route of administration (peroral or percutaneous). The necrotic lesions produced in the liver and kidney by ethylene chlorohydrin were also reduced in number and extent. Ethanol concentrations of the chlorohydrin were raised by ethanol administration, which suggests that the protective effect is due to competitive inhibition of chlorohydrin metabolism to chloroacetaldehyde.


Description of a case of allergic contact dermatitis due to phosphorus contained in matches in a worker employed in a match manufacturing plant. The skin lesions were located on the trunk and hands and on the face. Skin tests showed allergic reaction to phosphorus sesquisulphide with the reaction becoming as little as 20min after exposure. Histopathological examination showed intense skin infiltration which may be indicative of a lymphomatoid process.


Disisopropynaphthalenes (KMC) and 1-phenyl-1-xyllethanes are used as solvents in the manufacture of pressure-sensitive adhesives. No accumulation was found in fat after a single oral dose of these substances to rats or in other organs after continuous administration for 1 month. The substances were decomposed by liver homogenate in vitro. Rates of decomposition of all components of KMC were similar. The decomposition rate for 1-phenyl-1-orthoxylylethane was greater than that for 1-phenyl-1-metaxylylethane.

CIS 84-506 Toxicological studies on disisopropynaphthalenes (KMC) and 1-phenyl-1-xyllethanes (SAS). I. Biochemical examination of rats administered KMC and SAS. Hasagawa H., Sato M., Tsuruta H. Industrial Health, 1982, Vol.20, No.4, p.283-296. Illus. 7 ref. (In English)

Rats were administered 0.1g/kg body weight of KMC-A or SAS 296 every day for 1 month. Biochemical examination revealed an increase in liver weight, disturbance of lipid metabolism in the liver and serum and disturbance of glucose metabolism in the liver in cases of both substances. A significant increase in alkaline phosphatase activity in the serum occurred in the case of SAS 296 administration. A decrease in kidney weight was observed after KMC-A administration. These results indicate implications for the health of workers in contact with KMC or SAS.


Description of a method using direct-current plasma atomic emission spectrometry (wavelength selection, instrument operating parameters, sample preparation). The most suitable wavelengths for the analytical line are 437.924 and 309.311nm. Relative detection limits at these lines are 6 and 3pg/l.


Symptoms and pulmonary function were studied in 47 male subjects exposed to formaldehyde at a concentration of 0.45mg/m³ and 20 unexposed subjects, all of whom were employed in a carpentry shop. Symptoms involving eyes and throat as well as chest oppression were significantly more common in the exposed subjects than in the controls. Spirometry and single-breath nitrogen washout were normal before exposure. Reductions were observed in forced expiratory volume and maximum mid-expiratory flow and an increase in closing volume in percentage of vital capacity, after exposure. Reductions in forced expiratory volume and maximum mid-expiratory flow and an increase in closing volume in percentage of vital capacity, after exposure. Reductions in forced expiratory volume and maximum mid-expiratory flow and an increase in closing volume in percentage of vital capacity, after exposure.


Description of a method using direct-current plasma atomic emission spectrometry (wavelength selection, instrument operating parameters, sample preparation). The most suitable wavelengths for the analytical line are 437.924 and 309.311nm. Relative detection limits at these lines are 6 and 3pg/l.


An examination of the health hazards involved in working with 30 species of wood commonly imported into Finland (these are imported in quantities of more than 250,000year: abachi, 2 species of ash, beech, 3 species of oak, teak). The health complaints associated with each of the woods are shown. Skin, lung and mucous membrane disorders are the most common. The biologically active compounds are given for 15 of the species. Current Finnish standards allow for a wood dust concentration in the air of 5mg/m³, regardless of species. Czechoslovak standards are given, which range from 1mg/m³ for highly toxic or irritant woods to 10mg/m³ for biologically inert woods. Suggested countermeasures are: elimination of dust in the workplace, protective clothing, washing, personal selection.


Disisopropynaphthalenes (KMC) and 1-phenyl-1-xyllethanes are used as solvents in the manufacture of pressure-sensitive adhesives. No accumulation was found in fat after a single oral dose of these substances to rats or in other organs after continuous administration for 1 month. The substances were decomposed by liver homogenate in vitro. Rates of decomposition of all components of KMC were similar. The decomposition rate for 1-phenyl-1-orthoxylylethane was greater than that for 1-phenyl-1-metaxylylethane.

General information on the health hazards associated with woodworking (allergies, skin diseases, clinical aspects, symptoms, animal experiments) and on preventive measures. List of toxic wood species and systematic review of the literature. Woods causing bronchial asthma and rhinitis. Study of protein hypersensitivity, adenoma of the nasopharynx and Hodgkin's disease in woodworkers. Indices of botanical names, subjects covered, and trade names are appended. (39439)


This brief booklet, designed for use by trade union organisers and officials, covers: identification of polychlorinated biphenyls and their different names, description, uses, hazards (exposure, health effects); safe handling procedures and general work practices; emergency procedures; decontamination; storage; disposal; labelling; regulation; policy; sources. (39431)

CIS 83-231 Permeation of protective garment material by liquid benzene and by tritiated water. Weeks R.W., McLeod M.J. American Industrial Hygiene Association Journal, Mar. 1982, Vol.43, No.3, p.201-211. Illus. 36 ref. (In English)

The breakthrough time of benzene through butyl rubber, natural rubber latex, neoprene latex, nitrile latex, surgical rubber latex, Teflon, Viton elastomers, and composites or supported elastomers consisting of butyl-coated nylon, ethylene-vinyl acetate/polyethylene-coated polyester, polyethylene-coated Tyvek, poly(vinyl alcohol) and Saranex, was determined. The breakthrough time for neoprene was also determined. Breakthrough of benzene was correlated with breakthrough time. Observations were also made of the time required for tritium from tritiated water to permeate butyl rubber, nitrile latex, surgical rubber latex, and poly(vinyl alcohol). (38988)


Clinical examination of 12 patients with occupational allergy to rosin showed that the sensitizing agent is not always the same. The basic components of rosin and its decomposition products include numerous aggressive allergens or haptenes. (38003)


A collection of consensus reports which bring together and evaluate the relevant scientific data on substances which may present an occupational health risk; these consensus reports are intended for use as background material by the Swedish National Board of Occupational Safety and Health in the preparation of its occupational standards (exposure limits). Substances considered are: chlorine and chloroform; isocyanic argenic (excluding arsenic hydride); benzene, synthetic inorganic fibres; 1,1,1-trichloroethane; diisocyanates; oil mist; wood dust. (38039)


Mouse studies on poisoning due to carbon monoxide and related products given off during the thermolysis of natural or synthetic materials (solid poplar, particle board, cotton upholstery fabric, polyurethane foam, polypropylene sheet, PVC-coated cotton fabric, woven polyamide, woven glass fibre). The major hazard of carbon monoxide inhalation is pointed out. Findings: carbon monoxide was responsible, wholly or partly, for all animal deaths; among the survivors, cerebral cellular respiration was reduced in the case of 3 materials, and an increase in hepatic cellular respiration for 1 material. Optical microscopy showed major pulmonary lesions in the deceased animals due to 3 materials. For 6 materials, characteristic particles were found in the respiratory tracts of both the dead and surviving animals. (38242)


Report of a study undertaken to identify the cause of allergy in furniture-factory upholstery workers handling materials including glue, silicone spray, upholstery fabrics and felt. Radio-allergosorbent test (RAST) assays showed that sera from sensitised workers contained specific IgE towards the felt; however, further investigations using RAST showed that the allergen was not the felt itself but a contaminant of the felt. The felt was manufactured from a number of batches, some of which had been used to stuff castor bean. The sera with raised IgE to the felt also had raised IgE to the castor bean extract. RAST inhibition confirmed that castor bean allergens in the felt were solely responsible for the raised IgE in the sera. The in-vitro RAST results were found to correlate well with the in-vivo prick tests and clinical symptoms. (38112)


This section provides nomenclature, physical and chemical data, computerised structural formulas and new toxicological and hazard information about acetaldehyde, p-acetophenone, N,N-dimethoxy-2-amino­fu­rnure, o-allylphenol, allyl isocyanate, arsine, intermedia, amesite, asbestos, barium sulfate, basora corra, benzothiazole chloride, beryllium fluoride, beryllium oxide, beryllium sulfite hydrate, sec-butyl bromide, cadmium, caffeine, chromium, N,N-diethylacetamide, dimethyl sulfide, eumycotin, formamide, fructose, hydradine, lead, mestranol, mimoso tannin, myrant tannin, nickel, persimmon, ricin, niflomycin, silver nitrate, silver and compounds. (37759)


The breakthrough time for dimethyl sulfide was measured through samples of 4 types of rubber used in commercially available protective gloves. Breakthrough times varied from 1.5-2h for natural rubber to 8h for neoprene latex. (37423)


The breakthrough times and permeation rates of 29 laboratory solvents through 28 protective gloves were measured using gas-phase, infrared spectrophotometric techniques to determine the permeation characteristics. The gloves were made of polyethylene, polyvinyl chloride and natural, neoprene, and nitrile rubbers. 5 different types of permeation behaviour were observed. No one glove offered complete protection against all the solvents tested. The permeation rate of the solvent was inversely proportional to glove thickness for a given material. A 50:50 pentane/trichloroethylene mixture exhibited a large, positive synergistic rate. (37409)


This section provides nomenclature, physical and chemical data, computerised structural formulae and new toxicity and hazard information about acacia gum, acetal, acoline, acridine orange, actinomycin D, adriamycin, p-allylisonide, amarath, p-aminoazobenzene, 3-amino-2,5-dichlorobenzoic acid, aniline, areca nut, arsenic and arsenic compounds, azobenzene, beryllium, chlorinated biphenyls, chlorine, chromic acid(III), C.I.Disperse yellow 3, Citrus Red 2, cobalt, cottonsed oils, cycasin, daunomycin, DDT, diazomethane, 1,2-dibromo-3-chloropropane, dichlorovos, diethylstilbestrol, dimethylformamide, eumycelaine, endoxan, epilson-caraploactam, ergotaine tamtrate, expansin, gamma-butyrolactone, isopropyl acetate, mercuric acetate, mercury, 17-methyltestosterone, oxymethalone, platinum, podophyllin, selenium, sulfur dioxide, 2-iperb-butyl(phenoxy)-1-methylethyl-2-chlorothyl sulfite, testosterone, tin, titanium, titanium dioxide, valium, vinyl chloride. (37688)

CIS 82-731 Quinonoid constituents as contact sensitisers in Australian blackwood (Acacia melanoxylon RBR). Hausen B.M., Schmalle H. British Journal of Industrial Medicine, May 1981, Vol.38, No.2, p.105-109. Illus. 30 ref. (In English)

Shavings from the heartwood of Australian blackwood (Acacia melanoxylon RBR) were extracted with ethanol, and a 10% aceton solution of the extraction residue was applied daily to the skin of 10 albino guinea pigs. After 9 days a slight erythema developed and increased steadily to day 17 when treatment was stopped. 2 weeks later challenge to the skin of the same guinea pigs using the crude ethanol extract showed that sensitisation had occurred. 2 quinonoid compounds, 2,6-dimethoxy-1-methyl-3,5-di­hydrobenzofuran-4,7-dione, a newly identi­

The health hazards of formaldehyde, arising from its irritating and sensitising properties and possible carcinogenicity, are discussed in terms of occupational exposure and exposure of the general population. Substitution of formaldehyde, isolation of processes in which it is used, improved ventilation, and the elimination of free formaldehyde from building materials are suggested as means of reducing exposure.


Hydrogen sulfide, which is given off from spent lye, may give rise to acute poisonings and the formation of explosive mixtures in air. Safety measures described included: prevention of leaks and gas/air mixtures at the design stage and by exhaust ventilation and enclosure; marking out the danger zone; assessing the hazards of certain jobs (entry into tanks and drain pipes), measurement of gas concentrations; ventilation and use of respiratory protective equipment; blanking off of drainage pipes in which it is necessary for men to work; purging and ventilation of tanks and piping prior to entry; fire and explosion prevention.


Two case studies of dermatitis in workers employed in sawing tulip tree wood for use in a piano factory. Skin sensitivity tests were positive for tulip-tree sawdust, whereas there was no reaction to dust from other exotic woods. Experiments with guinea pigs and analysis enabled a quinone (2,6-dimethoxy-1,4-benzoquinone) to be identified. Quinones were found in the bark and heartwood, but were no longer present after 2 years storage.

CIS 81-1399 Wood, leather and some associated industries.. IARC Monographs 25, Evaluation of the carcinogenic risk of chemicals to humans, 1980, Supplement 1, p.1-49. 124 ref. Price: SF 60.00. ISBN 92-8-321225-8 (In English)

Data are given in 2 monographs: wood (lumber and sawmill industries, furniture and cabinet making, carpentry and joinery, pulp and paper industry); leather (tanning and processing industries, boot and shoe manufacture and repair, leather goods manufacturing industry). Appendices: mortality indices; occupational risks; chemicals used or produced and dyes used in the respective industries.


This BRE Information Paper gives data on: hazards of airborne fine wood dust in the sawmililing and furniture industries (inhalation, skin irritation; constituent chemicals of various woods); table of 37 varieties of wood classified as well-established irritants, (e.g. Thuja plicata); occasionally irritant, and possibly irritant, indicating also whether skin or respiratory irritant; dermatitis; respiratory tract irritation; nasal cancer; precautionary measures (face masks; use of hand-held blowers to remove debris from cutters should be discouraged).


An earlier, 1974, study (CIS 77-748) in the mould room of a ski manufacturing plant showed that assemblers exposed to 0.3ppm 3-(dimethylaminopropyl)amine had the highest prevalence of symptoms and a significant decrease in lung function over the workshift. Improvements in local ventilation reduced exposure in 1977 to 1/7 of the earlier concentration. At this level (0.13ppm) there was a marked reduction in symptoms and there was no decrease in lung function over the workshift. Cumulative effects are considered.

CIS 80-150 Contact dermatitis in the timber industry.. Stoke J.C. Contact Dermatitis, Sep. 1979, Vol.5, No.5, p.294-292. 3 ref. (In English)

Captive was used to protect the green sawn timber of exotic softwoods from sapstain and decay fungi. In a survey of 14 timber treatment plants, 23% of 133 workers exposed to captafol had symptoms of dermatitis. The dermatitis was usually of the irritant type but allergic dermatitis also occurred. The prevalence rate varied from 0 to 100% in the firms surveyed, and factors playing a role were: mode of use, wearing of protective clothing, and personal hygiene.


Occupations were classified by industry and by task within the industry. Lists of suspect carcinogens were drawn up and each substance was linked to industries and tasks in which it is used. It is thus possible to place in the same exposure category all individuals with a history of contact with a particular agent. Epidemiologic analysis can be based on chemical and physical exposures, rather than on industries or tasks. The system enhances the value of information on occupation obtained from death certificates, cancer registries, medical records, and questionnaires. Carpenters in the construction industry exposed to asbestos are used as an example.

35333

CIS 81-423 An occupation and exposure linkage system for the study of occupational carcinogenesis.. Hoar S.K., Morrison A.S., Cole P., Silverman D.T. Journal of Occupational Medicine, Nov. 1980, Vol.22, No.11, p.722-726. 23 ref. (In English)

Occupations were classified by industry and by task within the industry. Lists of suspect carcinogens were drawn up and each substance was linked to industries and tasks in which it is used. It is thus possible to place in the same exposure category all individuals with a history of contact with a particular agent. Epidemiologic analysis can be based on chemical and physical exposures, rather than on industries or tasks. The system enhances the value of information on occupation obtained from death certificates, cancer registries, medical records, and questionnaires. Carpenters in the construction industry exposed to asbestos are used as an example.

35371


Study of the frequency of toxic and allergic liver disorders and their clinical data in workers exposed to polyester varnishes and lacquers, and glues, used in this industry. The clinical picture was discrete. Biochemical tests giving most information were for pseudocholinesterase and glutamic-pyruvic transaminase, and determination of A and G immunoglobulin levels and protein quotients. Liver damage is accompanied by general sensitisation (cutaneous and respiratory allergy, increased immunoglobulin levels).
Round up of contact dermatitis due to varieties of plants and wood, examining their causes. Dermatitis due to plants is mainly found in agricultural workers and gardeners. This article reviews briefly the parts of plants which may give rise to dermatitis, various families of plants, and the number of varieties producing allergic reactions, and examines the external conditions required for sensitisation. The degree of ability to produce sensitisation, cross-sensitisation and the structure of sensitising substances (sesquiterpene lactones). The most well-known plants causing allergic contact dermatitis are listed. The article also reviews various aspects of contact dermatitis due to certain types of wood: exposure, allergen involved, woods containing sensitising agents (list of families and of species of wood), cross-sensitisation. Data concerning allergy tests are given, and the importance of preventive tests is stressed. French translation may be obtained from INRS, 30 rue Olivier-Noyer, 75880 Paris Cedex 14, France.

The pulp and paper industry is the greatest consumer of chlorine in Finland. In 1975 there were 939 persons exposed to chlorine or chlorine dioxide, and acute accidental exposure occurred in 59 cases. Some 40% of accidents were due to manufacturing processes; 10% to maintenance and repair work were responsible for more than 50%. Other factors involved were poor ventilation, non-use of personal protective equipment, and defective equipment. Recommendations made relate to: periodic inspection of equipment; instructions for maintenance workers; use of personal protective equipment; training of workers; monitoring of air chlorine concentrations.

CIS 79-240 Wood as a health hazard (Das Holz als gesundheitliche Noxe). Hartmann A.L. Swiss Accident Insurance Institute (Caisse nationale suisse d'assurance en cas d'accidents), Luzern, Switzerland, 1978. 59p. 23 ref. (In German)
MD thesis. Report of a study based on the analysis of 176 files made available by the Swiss Accident Insurance Institute (SUVA). A brief roundup of the health hazards found in the woodworking industry is followed by a clinical picture of health damage due to wood (toxicology and pathology of skin and respiratory disorders) and considerations on health engineering, improvement of workplace conditions, medical prevention and compensation.

Epidemiological study in 36 cases of ethmoidal tumour. Predispousing factors: previous infection, facial trauma, smoking, alcoholism; work in the shoe, textile and especially woodworking industry - 38% of the cases seen. Clinical signs and symptoms, treatment. Preventive measures: exhaust ventilation of wood dust, use of mask; screening out of allergic subjects, and polyp or chronic sinusitis sufferers. Discussion of hypotheses regarding diagnosis.

MD thesis. A general study of the aetiological factors in nasosinusal cancer, classified by general and occupational factors (woodworking, shoe industry; nickel, arsenic, chromate and chromates, asbestos, ionising radiation and isopropy oil exposure) precedes a retrospective study of 185 cases recorded in Bordeaux (France) in 1953-1974: histopathological types, topography, consequences. Positive reactions revealed hypersensitivity chiefly to chromium, among the metals, and to tetramethylthiuram monosulphide, tetramethylthiuram disulphide, and mercaptobenzothiazole among the rubber components. Analysis of the possibilities of cross sensitivity.

It is reported from Sweden that persons handling every day large quantities of selfcopying forms showed symptoms of allergy affecting the skin and mucous membrane, particularly during seasons when the central heating was operating and workplace air was too dry. To prevent these symptoms from developing, it is recommended to maintain a sufficiently high level of humidity, inform employees of the necessity for personal cleanliness, warn hypersensitive persons of exposure hazards and monitor occupational hygiene conditions in office stationery stores and offices.

Chlorophenol salts used to preserve sawn wood are a source of skin irritation when they contain impurities such as dibenzodioxins and dibenzofurans, which are formed by the action of light or heat. Vapours and dust from the treated wood are also irritating for the respiratory tract and have neurotoxic effects. Highly toxic impurities precipitate to the bottom of the dipping tanks. Replacement of chlorophenols by difluorides, which are easier to monitor, are used to preserve sawn wood. Medical histories were obtained, and eye irritation symptoms were ascertained. No relations of eye disorders or symptoms to chronic formaldehyde exposure or work history were found. Possible acute effects of formaldehyde on visual function were examined by administering tests of visual acuity, depth perception, peripheral vision, accommodation, fixation, and colour discrimination.
vision to 50 workers in one wood products plant both before and after work. No acute effects of formaldehyde on worker's performances occurred at formaldehyde levels which average 0.4 ppm. (27270)

**CIS 77-813 Occupational diseases of the nose and paranasal sinuses (Affections professionnelles touchant le nez et les sinus de la face).** Fougerol J. Université de Paris VI, Faculté de médecine Pitié-Salpêtrière, Paris, France, 1976. 64p. 28 ref. (In (French))

MD thesis. Part 1 summarises occupational diseases involving the nasal fossae: perforation of the nasal septum, above all caused by cadmium salts; allergic rhinitis due to certain woods, effects of enzyme-based additives (detergent production), flour (bakers) and gum arabic (printing trade); epistaxis in apple wrappers (pathology unknown); rhinitis of various origins. Part 2 is devoted to a concise literature survey of occupational cancer of the upper respiratory tract due to nickel, chromium, hexamethylene-tetramine in woodworking, kermes-tinting-tin: acrylonitrile, chromium, chromite, asbestos and radium). Part 3 deals with diseases of the sinuses: sinusitis due to exposure to dust and heat, or to cold in refrigerating plants; injury to the sinuses due to sudden pressure changes. Part 4 deals with disorders of olfaction (amyx, nasal anaesthesia in workers exposed to nickel and cadmium in alkaline storage battery production, etc.).


After a brief historical introduction this publication first gives details of the clinical effects of toxic woods, wood chemistry, the toxic substances involved, and a brief review of preventive measures (dust control, protective clothing, personal hygiene, barrier creams and personnel selection). The main part consists of a systematic review of the literature covering some 300 botanical species, and details of 63 cases of dermatitis caused by wood or sawdust seen at St. John's Hospital for Diseases of the Skin, London, the past 20 years. It concludes with a table of the principal toxic timbers (trade name, botanical name, clinical effects, active substances), statistics of United Kingdom hardwood imports for 1969, and a comprehensive index.

**CIS 77-495 Extrinsic pulmonary granulomatosis due to type III hypersensitivity in the occupational environment (A propos des granulomatoses pulmonaires extrinsèques par hypersensibilité de type III en milieu professionnel).** Kopytoff D. Université de Paris VI, Faculté de médecine Broussais - Hôtel-Dieu, Paris, France, 1976. 125p. 153 ref. (In (French))

MD thesis. Introductory considerations on extrinsic pulmonary granulomatosis (terminology, common features, differential diagnosis from asthma, immunological problems) are followed by case studies: various forms observed in agricultural workers (farmer's lung, bird breeder's lung, cheese washer's asthma, lung disease due to corn weevils, mushroom worker's lung) and in industrial and urban environments (millimalling plant workers, bagassosis, suberosis, coniosporiosis, lung disease due to exotic woods, lung disease in coffee roasters, air conditioning workers, and fur and pelt workers). Similar diseases, with some case histories, are also described, but cannot at present be included as extrinsic allergic granulomatous diseases; the lower lung, byssinosis, silic worker's lung, lung disease due to inhalation of enzyme detergents. The last part of the thesis is devoted to 2 cases: miliary appearance of a chest X-ray (mechanism: thesaurosis or allergy?) due to treatment of diabetes mellitus with certain drugs; and allergic pulmonary arterial thrombosis in a woodworker exposed to sawdust for some 30 years. Legal aspects of compensation in France are discussed.


These directives are designed to be the basis of evaluation of explosion hazards associated with the use of potentially dangerous substances as well as for the evaluation of the choice of protective measures to be taken. Definitions of technical terms (danger zones) and instructions for the implementation of these directives are followed by criteria for the evaluation of risks. Protective measures are surveyed: prevention of the formation and ignition of explosive concentrations, limiting the effects of explosions. Appendices: review (in tabular format) of actual explosions, and of the corresponding protective measures relating to the use of flammable gases and liquids, production and use of paints, rubber and plastics, formation of explosive dusts during work with solids, medical facilities and various installations.

**CIS 85-1810 Fire resistance of wood structures.** Oden K. Fire Technology, Feb. 1985, Vol.21, No.1, p.34-40. Illus. 18 ref. (In English)

Wooden structures are usually considered to be more dangerous from a fire safety viewpoint than structures built of non-combustible materials. However, some wooden structures have a fire resistance comparable or greater than certain other alternatives. Some statistical figures are given comparing wood with other materials. The fire behaviour and fire resistance of wood are discussed.


Contents of this updated manual: industrial fire risk management; life safety in industrial occupancies; plant emergency organisation and training; fire hazards in 20 major industries; special fire hazards in 13 processes; general occupancy fire hazards.


This comprehensive technical treatment of the principles, materials, testing, safety and smoke inhalation effects related to the flammability properties of plastics covers: objectives and contribution of plastics to fire fatalities; definitions of terms; combustion of plastics and stages in the burning process; fire retardants (how they work, additive, reactive); fire safety and aspects of plastics types (thermoplastic resins, thermostetting resins, specialty plastics, cellular plastics, composites and laminates); effects of toxic gas emission and smoke; test methods; regulatory and advisory agencies; sources of information.


Physical and chemical processes responsible for the origin and propagation of fires and explosions and other basic data are presented as preconditions for the scientific treatment of fire and explosion prevention. Physical parameters (ignition point, minimal ignition energy, explosive limits, etc.) are defined, and industrial sources of ignition are reviewed. Most of the book is devoted to preventive measures: fire and explosion hazards connected with processes and maintenance, protection of areas and installations (compressed air and oxygen systems, wood processing, transport and storage of dangerous substances, generation of dust and other mixtures of air with flammable substances, leaks of combustible substances, damage from various sources, variations in reaction rates and pressures, planning and design of installations, protection against the effects of explosions, automatic alarm and extinguishing systems). A list of relevant rules and standards in the German Democratic Republic is included.


Report on research to improve chip drying conditions in chipboard production plants (thermodynamic studies, atmospheric neutralisation by oxygen depletion, effect of drying conditions on gas emissions). The fire and explosion hazards of industrial dryers can be significantly reduced by more extensive monitoring of the parameters inside the dryer and the resultant improvement in the control of drying conditions.


Contents of this manual for training young forestry workers: basic Soviet legislation (Labour Code, OSHI regulations, personal protection); fire prevention and protection in training premises; occupational hygiene (limitation of exposure to harmful agents, personal hygiene, sanitary facilities, first aid);
occupational safety (safe work with power-driven tools; tree felling; other forestry and logging operations; fire fighting and fire prevention; occupational health rules for use of pesticides and chemical fertilisers. (17256)

CIS 81-809 Fire: triangles, jumps and falls. Thomas P.H. Fire Prevention Science and Technology, June 1980, No.23, p.3-7. Illus. (In English)
The “fire triangle” is used to represent the dependence of fire on the 3 factors: heat, oxygen, fuel. This paper, based on research at the U.K. Building Research Establishment’s Fire Research Laboratory, emphasises the particular view of ignition and extinction resulting from thermal imbalance. It outlines the results of a theoretical treatment of a compartment fire incorporating thermal feedback from the hot compartment walls to the combustible materials. There are circumstances, favoured by fuels that volatilise readily and by large surfaces of fuels, where increasing the ventilation leads to increase of burning rate beyond that which obtains in “open” burning. Such considerations explain some of the differences observed between fires in woods and plastics fires and plastics. (13381)


Chapters by individual authors include: fire risk management; life safety in industrial occupancies; fire hazards in major industries (electric generating and nuclear energy plants; grain mills; textile, vegetable and animal oil, rubber; woodworking; paper-making; plastics, painting, etc.); special process fire hazards (welding and cutting, spray finishing and powder coating, dipping and coating processes, heat processing equipment; chemical processes, boiler furnaces, oil quenching, fluid power systems, lumber kilns, agricultural; dehydrators and dryers, molten salt baths, refrigeration system; handling and cleaning of fuel; extraction; radiochemical; nuclear; materials, metalworking); handling and storage of flammable liquids and industrial gases, industrial storage problems, housekeeping, air moving equipment, materials handling systems, electrical installations, LPGs, waste control. Subject index. (33391)


Research on the composition and flammability of polishing dust containing organic matter from the grinding wheel and aluminium and iron oxides is reported. Lower flammability limit, maximum explosion pressure, and rate of increase of this pressure for dust of various particle sizes (from polishing wheel, exhaust duct, etc.) are listed. Measures recommended for fire and explosion safety: periodic cleaning of ductwork to eliminate paraffin deposits; control of dust concentration in the pneumatic conveying system; coating of ducting and cyclones with antistatic material; earthing of metal wheels, exhaust duct, etc.) are listed. Measures recommended for fire and explosion safety. (31719)


This article consists essentially of a table, with comments, of the physical properties (boiling point, flashpoint, fire hazard group, explosivity limits, rate of evaporation, specific gravity, vapour density, TLV) of the following aliphatic and cyclic hydrocarbons: 2-butyne, cyclohexane, n-decane, gasoline, n-heptane, n-heptene, isohexane, isopentane, methylcyclohexane, high flash naphtha (Stoddard solvent), VM and P naphtha, n-octane, n-pentane, xylene, toluene, xylene, benzene, trichloroethylene, carbon tetrachloride, chloroform, isopropyl alcohol, ethanol, propanol. (31288)

CIS 77-913 Handling waste products in the mechanised wood-working industry (Mekaaninen puuteollisuuden jätteiden poisto). Karttunen P. Teollisuusvalo tiedonantoja - Industribrand meddelanden, Helsinki, Finland, 1976, No.1, p.12-17. Illus. 5 ref. (In (In Finnish, Swedish))

Description of fire and explosion protection measures in pneumatic conveying equipment for waste wood products: fire protection in equipment design (dust control by exclusion of machines and exhaust ventilation, design of dust-conveying ductwork, choice of dust collector: cyclone or bag filter); fire prevention (elimination of ignition sources, earthing of ducts, measures against propagation of a localised fire, etc.); fire fighting (rapid detection, extinguishment methods, explosion-preventing devices). While mechanical handling is more expensive than pneumatic, it is preferable on grounds of safety. (27295)

3.6. Other health hazards

CIS 87-866 Ionising radiation. HMSO Bookshop, 49 High Holborn, London WC1V 6HB, United Kingdom, 1983. 18p. Illus. Bibli. Price: £2.60. (In English)

This guidance note is intended to assist mills in the paper and paper products industry to meet legal obligations to avoid radiation risks. Covered are: population exposure; types of radiation; effect of exposure; principles of protection; what employers and employees should do; what suppliers, agents, or installers should do; legal requirements; emergency procedures; substance, level and profile gauges; miscellaneous uses in the industry; glossary. (48182)

CIS 86-1954 Contact allergy to safety shoes. Fusserau J., Musliman M., Cavelier C., Hervé-Bazin B. Contact Dermatitis, Apr. 1986, Vol.14, No.4, p.233-236. 4 ref. (In (English))

During the period 1972-1984, 13 cases of contact allergy to safety shoes were recorded at Strasbourg Hospital. The patients were most often males in the 22-38 year age group, with eruptions on the backs of their feet or toes. There were 6 cases of allergy to leather, 4 to nitrile rubber, 2 to azo dyes, 1 to glue and 1 to contaminants from the industrial environment. As these figures show, some patients were sensitive to more than one component of their shoes. Changing the brand of safety shoe worn may cure the dermatitis; if it does not, the affected worker may have to be transferred to work that does not require safety shoes. (47028)


An investigation of 2,068 cases of biliary-cancer in Sweden revealed statistically significant increased risks for cancer of the gall bladder in men engaged in refuse collection, papermaking, chemical processing, shipping and repairing, and for both sexes in the textile industry. A significant increase in the incidence of other cancers of the biliary tract was found in shipbuilding, the construction-materials industry and among insulation workers. The possible implication in the last 3 industries of asbestos workers is discussed. (46470)


This report lists the harmful substances (i.e. those causing officially recognised and other occupational diseases) used in the woodworking industries. Tropical and native varieties of wood and new technologies were taken into consideration. Summary: listing of occupational diseases recognised in Belgium; harmful varieties of wood; occupational cancer and the woodworking industry; harmful substances and preparations; cancers of the upper respiratory tract; formaldehyde and occupational cancer; formaldehyde in paintboard. Reproduction of regulatory texts of the European Communities. (46358)

CIS 86-753 Allergic dermatitis due to native woods, the lichens and liverworts (Des formes allergiques aux bois de pays et à leurs lichens et hépatiques). Foussereau J. Fiche d’allergologie-dermatologie n°33, du Fosse aux Loups 38, Boîte 5, 1000 Bruxelles, Belgium, 1984. 289p. Bibli. (In French)

This book, written for physicians, has 3 chapters dealing with topics of recent research results and mentions common contact sensitisers such as resins and oils, or indirectly because of reactions to lichens or liverworts (in particular, Frullania). (46372)


This book, written for physicians, has 3 chapters dealing with topics of interest to OSH specialists. Chapter 7 (photoimmunology and cutaneous photosensitivity) discusses the dermatological effects of exposure to sunlight or to ultraviolet radiation (UVR), including photodermatoses, photoal­ergy, solar urticaria, photosensitive eczemas, persistent light reaction and UVR effects on allergic contact hypersensitivity. Chapter 11 (cutaneous manifestations of connective tissue diseases) discusses the possibility that lupus lesions might be caused, among others, by exposure to UVR in the 290-320nm range. Chapter 15 (allergic contact dermatitis) summarises recent research results and mentions common contact sensitisers such as rubber, nitrile rubber, metals, resins and rubber. (46428)

Papers presented during this meeting (Rennes, France, 29-May-2 June 1984) devoted to theme No.1: allergies in occupational medicine. The papers are grouped under headings: 1. Reaction allergies (occupational exposures to isocyanates, the rubber industry, dental prostheses, plastics, cotton dyes); 2. Hypersensitivity reactions of the respiratory system (extrinsic allergic alveolitis); 3. Contact dermatitis (in hospitals, hairdressing salons, among makers of dental prostheses); effectiveness of skin protective creams.

CIS 85-1195 Protection of workers against non-ionising electromagnetic radiation: examples of improvements in radiofrequency (RF) equipment in the plastics, wood and metal-working industries (Protection des ouvriers de l'industrie plastique, bois et métallurgie). Osnabrugge G. N. (translated from Dutch). Bk. 1984, no. 6, p. 437-442 Illus. 9 ref. (In Italian)

The installation of metallic screens (nets, cages, etc.) reduced significantly the size of the electromagnetic field in factories in 3 different industries. The installations and their effects are described. French translation available from INRS, 30 rue Olivier-Noyer, 75680 Paris Cedex 14, France. (44614)


This guidance publication covers the prevention of exposure to ionising radiation used in the paper and board industry. Coverage: types of radiation; effects of exposure; principles of protection; duties of employers and employees; legal requirements; emergency procedures; types of substance gauges; positioning; shielding; warning signals and notices; level gauges; profile gauges; miscellaneous uses in industry. (44126)


Contents: dermatitis due to irritation and allergic sensitisation; physical and biologic causes; urticaria; acne and chloracne; skin cancer; nail disorders; diagnosis; patch testing; treatment, prevention and rehabilitation; medico-legal aspects; plant survey and inspection; soaps and detergents; metals; plastics; paints, varnishes and lacquers; solvents and plasticsizers; natural and synthetic rubber; petroleum and petroleum derivatives; plants and woods; pesticides and other agricultural chemicals; occupations, their irritants and allergens. (40300)


Over 1,600 ref. Index. Price: US$69.50. ISBN 0-8089-1494-4 (In English)

Tumour registry records for 1955-77 were studied in order to identify high-risk jobs, industries and geographic locations. There were 201 cases of malignant mesothelioma, 19 of primary malignant pleural tumours. Relative risk for carpenters and cabinet makers was 2.25, for plumbers and pipe-fitters 3.87, and for rubber industry workers 5.08. Occupational exposure was indicated in 85% of the cases. Risk increased with greater exposure and age. (42425)


Field strength measurements were made on heaters used for plastic sealing, wood glueing and metal welding and hardening. The exposure of 58 operators was compared with Russian, Polish and Canadian and US standards. Exposure to electric and magnetic fields were above the highest permissible levels in 58 and 31% of workers, respectively. (42425)


This loose-leaf collection is published under the auspices of the Toxic Substances Control Commission of the German Research Association. It contains basic information on 190 industrial substances (gases and vapours), as well as on quartz, asbestos and cotton dusts. The 9th supplement also contains developments in the definition of exposure ceilings and limitations of short-term exposure, information on cutting fluids, wood dust, organic peroxides, dusts (general exposure limit for fine dusts, definitions and medical standards), and 33 other harmful substances, including aminolevulinate, 1,2-dichloroethane, dichlorofluoromethane, ethylene glycol monoethyl ether, carbon hexafluorocyclohexanes, methoxyethanol, trimethyl phosphate, xylene, and respirable dusts of antimony trioxide and cadmium chloride. Each monograph contains toxicological information and the results of observations on man and animals, followed by the reasoning that led to the adoption of particular MAC values. (41921)


The ABH (blood group antigens) secretor status of 1422 pulp mill workers was investigated: there were 331 non-secretors (23.3%). Respiratory symptoms and lung function test results were not significantly different between secretors and non-secretors. ABH secretor status is not related to respiratory symptoms or spirometric abnormalities in pulp mill workers, and ABH non-secretor status is not a significant risk factor in the development of chronic obstructive lung disease. (41993)


In these industries, electrically heated machines are used for the welding and gluing of plastic or wooden elements. The users of these machines can be exposed to high levels of radiofrequency radiation. This report reproduces the results of tests on 89 machines installed in 20 Norwegian enterprises, establishing the strengths of electric and magnetic fields created around the machines. The results are compared with the radiation protection standards under development in Norway. The radiation level around some of the machines resulted in exposures of workers to fields with equivalent energy densities of over 250W/m² (averaged over 1s) and 10W/m² (averaged over 1h). Protective screens and exposure limits are presented. (41833)


Proposals as to medical supervision procedures (detection, compensation, prevention) for occupational health hazards specific to woodworkers (respiratory diseases, ethmoid cancer and hearing loss). (40300)


Report of a survey of 1,070 pattern makers and other woodworkers employed in automobile plants in Detroit, USA. Cancer incidence rates in the study group were compared with corresponding data for white males in the Detroit Metropolitan area using the Michigan Cancer Foundation Registry. Determination of standardised morbidity ratios showed significant increases for cancers of all types combined, and for colorectal and salivary gland cancer in particular, in the study group. Further investigation is required to determine whether occupational exposure is responsible for these increases or if some other aetiological mechanism is involved. (38740)


Contents of this manual, to which several authors contributed: diagnosis of occupational skin disease (OSD); principles and significance of occupational site survey; risk factors in OSD; dermatoses due to water, soaps, detergents, solvents, allergens; use and abuse of patch tests; allergic contact dermatitis (immunologic aspects); treatment of OSD; biologic causes of OSD (microbes, fungal diseases, viral agents); physical and mechanical causes; photobiologic effects; the pilosebaceous unit; sweat retention syndrome; pigment responses and pigmentation disorders; compensation; predisposing factors and pre-employment medical examinations; assessment of cutaneous impairment and disability; determining allergic contact potential of chemicals; predictive tests for allergic contact dermatitis; percutaneous absorption; dermatitis of the hands in beauticians; contact dermatitis in...
medical personnel; fiberglass; cutting fluids; epoxy resins; other plastics; metals; printing-plate manufacturing; culinary plants; forest products, construction work; scleroderma due to silica dust; paints and oil of turpentine.


Contents: accident hazards in agriculture, industry and commerce (statistics); occupational pathology (osteo-articular and neuromuscular signs and symptoms, noise hazards, skin and respiratory lesions, hazards in the use of wood preservatives). The report is supplemented by papers on occupational dermatitis. There are 280 cases of hand, foot and mouth problems in the wood preservation industry, 25 cases involving contact with wood preservatives, 15 cases of dermatitis due to work in sawmills and 19 cases of dermatitis due to work in pulp and paper mills. Other papers in Vol.42, No.6 cover dust levels produced by various woodworking machines; exotic timber dermatitis; pathogenic properties of wood preservatives; noise measurement in joinery shops; occupational dermatitis in the gluing of laminates, and the working of wood treated with insecticides and fungicides. (37198)


Report on a survey initiated as a result of the growing number of workers suffering health impairment due to microorganisms, in particular in sawmills and printing works. Sections deal with microorganisms as occupational hazards (e.g. aflatoxins, citrinines); workplaces in which microorganisms are found (breweries, hospitals, sewage treatment plants, poultry slaughterhouses, etc.); results of air analyses in polluted workplaces; monitoring atmospheric bacteria and spore contamination (filter or impinger air sampling; sedimentation in culture dishes; identification, medical supervision); control measures (examples of measures against fungal spores taken in a sawmill; against pathogens in a hospital; against bacteria in the food industry); action programme, in particular against mould spores and hospital-staff infections. (37192)

CIS 82-538 Recognition of health hazards in industry, Burgess W.A. John Wiley & Sons Ltd., Shirley, Bognor Regis, West Sussex, United Kingdom, 1981. 275p. Illus. 274 ref. ISBN 0-471-06339-8 (In English)

This book is a detailed, practical guide designed for students, occupational health practitioners, and plant operating personnel. 3 sections cover: general format of a plant survey and the information that should be obtained; a description of the common operations encountered in many different industrial settings; a record of selected major safety and health problems encountered in production facilities that employ large numbers of workers and represent a wide spectrum of hazard potentials (e.g. abrasives, acids, asbestos products).

CIS 81-1393 Skin and mucous membrane problems from "no carbon required" paper.. Menne T., Asnaes G., Hjorth N. *Contact Dermatitis*, Mar. 1981, Vol.6, No.2, p.72-76. 8 ref. (In English)

A questionnaire survey was undertaken in 2400 employees of a telephone company employing up to 900,000 sets of carbonless paper per year. Patch tests in 35 workers reporting itching, dermatitis, and mucous membrane symptoms were negative. The discussion centres on the manufacturer's contention that the reactions were due to a mass psychosis, and the author's conviction that some component of the paper was responsible. No substance which might cause the symptoms was identifiable through the usual dermatological tests.

CIS 81-1378 Occupational pathology of the head and eyes in joiners and cabinet makers (Pathologie oculofaciale médicale professionnelle chez les menuisiers et les ébénistes). Saris S. Université de Bordeaux II, Unités d'enseignement et de recherche des sciences médicales, Bordeaux, France, 1980. 123p. 47 ref. (In French)

MD thesis divided into 2 parts. Part 1 deals with cancer of the ethmoid sinuses; history, clinical features and natural history, comparison of the author's findings in 6 cases with those in the literature, specific features of ethmoid cancer in joiners and cabinet makers, woodworking jobs on which cancer cases observed were employed and materials used, hypotheses on the pathogenesis and problems of legal medicine. Part 2 deals with occupations, to extract selected adhesives in wood finishing materials, fields of action (allergic eczema, respiratory allergy, eye reactions); diagnosis; prevention; legislation; statistics. Wood dust which has a long-term degenerative effect on the nasal mucosa (sinus and ethmoid process) has a major role in allergic reactions. The major safety and health measure is local exhaust ventilation of wood dust.


A case report of workers suffering from skin irritation as a result of the overflow of wood pulp slurry from an overhead tank is presented. The active constituents of the silicic acids involved were 1,4-bis(bromocetoxy)-2-butenet, 2,3-dichloro-4-bromotetrahydrothiophene 1,1-dioxide. (35588)

CIS 80-1665 Contact allergy to the Brazilian rosewood substitute ilíacaerium scleroxyylon Tul. (Para fero). Conde-Salazar L., Garcia Diez A., Rafeenberger F., Hausen B.M. *Contact Dermatitis*, June 1980, Vol.6, No.4, p.246-250. 7 ref. (In (In English))

Five cases of allergic contact dermatitis of the hands, forearms and neck in carpenters exposed to the sawdust of this wood are reported. Patch tests with the primary sensitizer R-3,4-dimethoxydibenzogrene (R-5,6-dimethoxydibenzogrene) were positive. (3458)


Diagnosis of this case was based on the patient's history of exposure to mouldy wood, clinical symptoms and signs, and physiological and radiographic findings. The work environment contained a large number of species of fungi and actinomycetes, above all Aspergillus and Thaumatoconynes vulgaris, one of which is considered to be the causative agent. (3437)


Since the introduction of wood dryers installed under the same roof as the sorting and re-saw workshops, several cases of this disease, respiratory allergy to mould spores, have been reported. The clinical picture resembles that of extrinsic allergic alveolitis observed in workers engaged in burning woodchips for heating the workshops. Since drying at 40-45°C promotes development of certain moulds, increasing the temperature to 60°C is recommended. Other measures proposed are: improved ventilation, regular cleaning of workshops, use of air-supplied helmets, transfer to other work.


The permeability coefficient of benzene vapour was calculated from the solubility and diffusion coefficients of natural rubber, nitrile, neoprene, natural rubber plus neoprene, butyl rubber, polyvinyl chloride, and polyethylene membranes determined experimentally. For rubber the permeability coefficient was 4.2 x 10⁻¹⁰m²/s at a benzene concentration of 10ppm: i.e. a worker completely clothed in 0.0254cm natural rubber suit would be exposed via the skin to 0.3μg benzene over 8h. At low vapour concentrations, exposure via the respiratory tract is likely to be greater than that via the skin if the worker is suitably clothed. (33933)


Urine samples were collected on Monday and Thursday from 32 treatment operators at 6 timber preservation plants, and 9 controls. The mean arsenic level for the operators was 222μg/l (controls 5-40μg/l). It is recommended that the wood preservation industry take engineering measures to reduce air emissions and adopt strict work practices in hygiene and protective clothing. Clinical examinations of timber treatment operators should be done for early signs of chronic exposure (warts, skin pigmentation).


A literature survey and a review of the pathogenetic and clinical aspects of the health hazards of tropical woods are followed by a report on a study at a chipboard factory: dust conditions; gases and vapours; microclimate; noise; clinical data in 73 workers. Clinical findings included respiratory trac,
gastrointestinal, liver function, osteoarticular, cardiovascular, skin, eye and hearing disorders. Preventive measures are proposed with regard to noise, dusts and gases, medical examinations, and personal protection. (33555)


Presented are brief statistics (149 woodworkers identified among the 449 cases of ethmoid tumour in France), clinical and social data; preventive measures; medicolegal aspects (need for modification of the 47th French schedule of occupational diseases). (33753)


Analysis of 165 case studies in Switzerland: clinical examination, aetiology, pathogenesis. Included were 130 cases of contact eczema and 35 cases of various respiratory tract disorders (nasal pruritus, chronic rhinitis, obstructive impairment). Health damage was mainly due to exotic woods. 350 wood varieties were health damaging. Exposure to wood dust during woodworking operations was the principal cause of these health disorders. Mechanical, toxic, pharmacological and allergic factors play a role in pathogenesis. No indication of carcinoma of the nasal sinus was observed. (33993)


Sera of 38 chain-saw operators and a control group of 18 forestry workers were examined. Four of the 24 serum constituents analysed showed significant differences between the 2 groups. The mean values of glutamic oxaloacetic transaminase, glutamic pyruvic transaminase and lactic dehydrogenase were significantly higher, and that of cholinesterase significantly lower, in the chain-saw operators. Vibration stress may influence the metabolic processes of transamination and glycosynthesis in workers operating chain saws. (33321)


100 undertakings in Uusimaa, a southern province of Finland, employing 1,181 production workers were studied in 1976. Results relate to: provision of work clothes; general health services, labour practice; in-plant occupational safety and health activities; occupational safety and health according to plant size and hygiene conditions. Health hazards were most prevalent in manufacture of non-metallic mineral products, manufacture of non-metallic furniture, manufacture of metal products other than machinery, and manufacture of food products other than furniture. The commonest workplace hazard was noise (60-80% of workers in the wood and metal products manufacturing industries were exposed to more than 85dB(A)), poor lighting, and chemical exposure. Use of personal protective equipment, work load, and the occupational accident and disease rates are considered. (30019)

CIS 78-1911 Hazards of occupational exposure to high frequency electromagnetic fields (Risques présentés par l'exposition professionnelle aux champs électromagnétiques à haute fréquence). Albert S. Traduction INRS 53 B-77, Institut national de recherche et de sécurité, 30 rue Olivier de Serres, 75690 Paris Cedex 14, France, 1977. 23p. 30 ref. (In French)

Translation of: Rischi e danni derivanti da esposizione professionale a campi elettromagnetici ad alta frequenza. Securitas, Roma, Italy, Jan.-Feb. 1976, Vol. 61, No.1-2, 30 ref. Commenting that knowledge of the pathological effects of short and ultrashort electromagnetic waves is still inadequate, the author examines a number of articles from the literature (mainly Soviet) on the subject, and describes his own studies of 2 groups of workers (5 in one group, 26 in the other) exposed to electromagnetic fields from high-frequency wood gluing equipment. The results he obtained show conclusively the effects of high-frequency electromagnetic fields on the genital organs, and would seem to confirm the findings of other authors on their effects on the central nervous, cardiovascular and respiratory systems. (30278)


Catalogue with summaries of all the films (generally 35 and 16mm) produced by the INRS. Subjects covered: general problems; common hazards and problems (lifting, handling, etc.; fires and explosions; electricity; machinery and plant; workplace environment; occupational medicine and health; harmful products; personal protection; commuting accidents); special hazards (metallurgy, construction and civil engineering, quanries, wood and processing of plastics, printing, rubber, paper and cardboard, textiles). The catalogue contains 77 titles and summaries of films produced by the INRS and 45 from other sources. (30003)


The steps taken to establish a causal relation between occupational exposure and cancer are described. A distinction is drawn between: 1) known hazards, including specific agents (ionising radiation, ultraviolet radiation, aromatic amines, asbestos, vinyl chloride, bis(chloromethyl) ether), mixtures and complex products (soot, coal black, tar, mineral oils) and occupations where the responsible agent has not been identified, and 2) potential hazards where epidemiological and experimental data have not demonstrated carcinogenicity with certainty (e.g. for woodworkers and those handling arsenic, nickel, chromium and benzene). Control and prevention measures are dealt with: replacement of dangerous substances, selection of workers, collective and personal protection, surveillance of plant and personnel. Tables give cancers observed in France, the main occupational cancers and preventive measures in certain cases. (30017)

CIS 78-567 Occupational diseases - A guide to their recognition. DHEW (NIOSH) Publication No.77-181, National Institute for Occupational Safety and Health, 4876 Columbia Parkway, Cincinnati, Ohio 45226, USA, June 1977. 608p. Illus. Approx. 1,000 ref. (In English)

This book is intended as a ready reference tool for physicians, nurses and others involved in preventive occupational health programmes. Contents: routes of entry and modes of action; biological hazards; dermatoses; disease of the airways; plant and wood hazards; chemical hazards; chemical carcinogens; pesticides; physical hazards (radiation, atmospheric variations, oscillatory vibrations); sources of consultation and reference aids in the US and abroad. (27871)


This decree adds the following new tables (34 to 42) to the tables of statutory occupational diseases in agriculture listed in the French Labour Code: list of substances and products other than furniture. The commonest workplace hazard were noise (60-80% of workers in the wood and metal products manufacturing industries were exposed to more than 85dB(A)), poor lighting, and chemical exposure. Use of personal protective equipment, work load, and the occupational accident and disease rates are considered. (30198)


4. ERGONOMICS

epidemiology of general musculoskeletal disorders, methods for the evaluation of work postures and back pain, studies of particular disorders (back pain, repetitive strain injury, shoulder disorders, carpal tunnel syndrome), preventive strategies (training, selection, screening, ergonomic design). Industries and occupations considered in individual papers include: bus drivers, seated work, crane drivers in a steelworks, powerhouse quarrymen, trench digging, sewing machine operators, oil platform workers, the food-processing industry, bricklayers, cargo handlers, keyboard operators, freight-container tractor drivers, the furniture industry, lifting of patients in hospitals, supermarket workers, building construction.


Pulmonary function was studied in 66 wood trimmers after an exposure-free month, 3 and 27 months later and during a working week. The results of forced expiratory volume and single breath nitrogen washout were compared with results from local controls and with other reference materials. Forced vital capacity (FVC) and forced expired volume for one second (FEV1) declined by an average of 0.4L and 0.3L respectively after one exposure-free month but there were no definite changes in nitrogen washout variables. Repeated measurements made on a Monday morning, 3 months later after 2 exposure-free days, disclosed a further decline in FVC and FEV1, by an average of 0.2L at the sawmill with heavy exposure to moulds (10 - 100 colony-forming units/m³), with a further decrease of 0.3L after 4 days of work. None of these declines was seen in another sawmill whose exposure level was 10-100 times lower. Measurements made 27 months later revealed no additional impairment. The impairment was more apparent at the sawmill with higher air concentrations of organic dust than at the other sawmill. Wood trimmers may develop restrictive pulmonary dysfunction which may be due to an immunopathological response to heavy exposure to mould.


A long-term (15 years) follow-up study of 504 Swedish papermill workers showed a significantly increased relative risk of developing ischaemic heart disease among workers with shift-work exposure for a period of 11-20 years. This association was independent of age and smoking history. There was a significant increased relative risk of developing ischaemic heart disease among shift workers with shift-work exposure for a period of 11-20 years. Since 1979, the German Federal Labour Protection Institute has published Forschungsergebnisse f黵 die Praxis. Bundesanstalt f黵 Arbeitsschutz, Vogelstrasse 50, 63303 Hanau. 35 sheets published in this series of data sheets those research results which have been of immediate practical use in occupational contexts. The 30 sheets published since 1979 and 1981 dealt with reduction of noise from machines and plant, ergonomic aspects of hand tools and work with visual display units, occupational stress in sales work, vibration of drivers' seats, and lone workers. The 7 sheets published in 1984 show the ways in which the impact of woodworking machinery can be reduced.

CIS 84-1107 Ergonomics applied to forestry (Die Anwendung der Ergonomie auf die Forstarbeit). Forschungsanstalt fur Forstliche Versuchsanstalten, 1131 Wien, Austria, 1984. 256p. Illus. (In English, German)

Proceedings of an international seminar (Vienna and Ossiach, Austria, Oct. 1983) organised by the Austrian government in collaboration with the ILO and other international organisations. The 35 contributions relate to: ergonomics research, training in ergonomics, recent information on accidents in forestry and their prevention, health effects of forestry work, medical services, work clothing and personal protective equipment.

CIS 84-5880 Oxygen consumption of lumberjacks in logging with a power-saw. Kukkonen-Harjula K. Ergonomics, Vol.27, No.4, p.39-65. 16 ref (In English)

The cardiovascular load and strain sustained by 15 loggers (average age 34 years) working in autumn and winter were evaluated by measuring the subjects' oxygen (O₂) consumption and heart rate (winter only). O₂ consumption was 1.9±0.3l/min during felling and 2.2l/min during bunching, regardless of season. Various factors of work difficulty reflecting external working conditions had no association with the O₂ consumption at work, and no significant seasonal difference was observed as regards cardiac strain.


The impact of computerisation on the tasks of operators was studied to analyse the presentation of information and the lay-out of controls and to learn the changes computerisation produces in the working conditions and well-being of the operator. Contents: methods used in the study; theoretical aspects; ergonomic study (descriptions of paper-making equipment, of work organisation and the tasks of machine operators, and of computer-assisted control systems; impact of computerisation on the operator; commentary and discussion); questionnaire survey comparing the working conditions in computerised and non-computerised factories; the psychosocial working environment.


Contents of this monograph: Part I, attitudes and standards: approaches to safety, standards and legislation, recognition and control of hazards; Part II, the human element: people and accidents, personal protective equipment; Part III, the workplace environment: atmospheric conditions, walking and standing surfaces, egress and life safety, noise and noise control, fire prevention and suppression, explosion, radiation, hazardous materials; Part IV, equipment design: mechanical hazards, electrical hazards, tools and machine controls, principles of machine guarding; Part V, applications: materials handling and storage, woodworking and metalworking operations. Appendices: TLVs for hazardous substances; conversion factors; properties of common materials.


Study on the anthropometry of workers employed in the civil engineering and construction sector in Brazil: tables of height, width, length, circumference and other measurements of limbs and fingers, feet; reach distances; analysis of human joint mechanics and movements; work with hammers and saws; pushing wheelbarrows; manual digging with spades (proposals of ideal prototype models for each tool). Appendix: table of 17 anthropological measurements of 59 workers.
5. REGULATIONS AND STANDARDS FOR OCCUPATIONAL SAFETY AND HEALTH IN THE WOOD INDUSTRIES

5.1. Sawmilling

CIS 79-201 Safety requirements for sawmills. ANSI 02.1.1978, American National Standards Institute, 1430 Broadway, New York, N.Y. 10018. This standard approved 9 Nov. 1978. 230 p. Ref. (In English)

This standard, which updates ANSI 02.1-1969 (CIS 3000-1970 Xhp (203)), includes safety requirements for log and lumber handling, sawing, trimming, and planing; waste disposal; dry kilns; finishing; shipping; storage; yard and yard equipment; and for power tools and affiliated equipment. Definitions are followed by sections devoted to: buildings, facilities, and equipment (walkways, docks, platforms, stairways; means of egress; air requirements; vats and tanks; lighting; marking; heating appliances; electrical equipment; compressed air systems; liquefied petroleum gas storage and handling; gas piping and appliances; flammable liquids; storage, handling and use of chemicals; steam boilers; internal combustion engines; conveyors; blower, collecting and exhaust systems; chippers; mechanical power transmission; bins, bunkers, hoppers and fuel houses; elevators and hoists; cranes; ropes; cables; slings and chains; mechanical stackers; lumber piling, storage and loading, etc.; log handling, sorting, and storage; log carriages and carriage runways; head saws; trimmer saws; edgers; planers; laser; personal protective equipment, fire protection.

5.2. Plywood and fibreboard

CIS 85-1143 Machinery and equipment for the manufacture of wood particle board - General safety requirements for safe design (Stank i miány dla produkciolet drewnostrużnych płyt - Trobienia bezopasnosti k konstrukcji). GOST 12.2.026.19-83, USSR State Committee for Standards, (Gosudarstvennyj komitet SSSR po standartam), Izdatel’stvo standartov, Novopresnenskij per. 3, 123840 Moscow, USSR, 1983. 6p. Price: Rbl.0.03. (In Russian)

This standard (supplementing GOST standard 12.2.026-77, effective 1 Jan. 1985) lays down general requirements for the safe design of the following machinery and equipment: crushers, chippers, hoppers for chips, shavings and dust, worm feeders, mechanical and pneumatic separators, glue mixers, moulding machines, conveyors, cutting and finishing equipment; cold and hot presses; edge cutting machines; drying plants. Contents: general requirements; safety requirements for controls and workstations, optical and acoustic warning devices, electrical equipment.


These safety rules specify fire and explosion protection measures to be considered in the design, construction, equipment and use of particle-board manufacturing plants. Sections cover: definition of technical terms; safety devices (elimination of foreign bodies, regulation and control of material flow, fire alarms and fixed extinguishing systems, protection against the effects of an explosion); use of inert gases; safety devices and safety measures specific to various parts of the plant; operation, inspection and testing. Appendix: list of relevant standards and regulations in the Federal Republic of Germany.

5.3.135


This standard (effective 1 Jan. 1978) prescribes the safety and health requirements to be met as regards the production process and materials used in plants manufacturing particle board; general rules; equipment used (detectors for metal particles; local exhaust ventilation for drying plant, presses, etc.); rules concerning layout of equipment and controls; storage and handling of raw materials, finished products and waste; personnel safety training; personal protective equipment; enforcement of the rules.
5.3. Carpentry, joinery, furniture making and construction

CIS 85-933 Woodworking machinery - Carpenters’ band saws - Safety requirements (Derevoobrabatyvajuschee - Trebovanija bezopasnosti). USSR State Standards Committee (Gosudarstvennyj Komitet SSSR po standartam), GOST 12.2.026.18-83, USSR State Committee for Standards, (Gosudarstvennyj komitet SSSR po standartam), Izdatel’stvo standartov, Novoprosveshenskij per. 3, 123840 Moskva, USSR, 1983. 2p. Price: Rbl.0.03. (In Russian)

This standard (effective 1 Jan. 1983) applies to band saws for straight-line and curvesine sewing of wood. Contents: general requirements for the safety design of these machines (enclosure of blade, automatic blade and pulley cleaning devices, interlocks, etc.); prevention of the start-up of machines without a blade; requirements for blade guard below the saw table and for electrical equipment. (44201)

CIS 80-1762 Woodworking machines - Safety rules (Oborudovanie derevoobrabatyvajushej - Trebovanije bezopasnosti). USSR State Standards Committee (Gosudarstvennyj Komitet SSSR po standartam), GOST 12.2.026.1-80 to 12.2.026.10-80, Izdatel’stvo standartov, Novoprosveshenskij per.3, 123557 Moskva, USSR, 3 mar. 1980. 22p. Price: Rbl.0.05. (In Russian)

Collection of 10 standards (effective 1 July 1981) concerning vertical frame standards Committee (Gosudarstvennyj Komitet SSSR po standartam), GOST 12.2.026.18-83, USSR State Committee for Standards, (Gosudarstvennyj komitet SSSR po standartam), Izdatel’stvo standartov, Novoprosveshenskij per.3, 123840 Moskva, USSR, 1983. 2p. Price: Rbl.0.03. (In Russian)

Aspects covered: legal requirements in Ontario; hazard analysis; chemical cleaning devices, interlocks, etc. for preventing the start-up of machines without a blade; requirements for blade guard below the saw table and for electrical equipment. (44201)

5.4. Pulp and paper


Directive concerning safety regulations on paper making machines. (47903)

CIS 86-1444 Paper box industry - Safety and health guide for supervisors, joint health and safety committees, employees, IAPA No.B00880, Industrial Accident Prevention Association, 2 Bloor St. West, Toronto, Ontario M4W 3N8, Canada, 1986. 54p. (In English)

Aspects covered: legal requirements in Ontario; hazard analysis; chemical and mechanical safety; static electricity; press operations; materials handling; information sources. (46573)


Regulations and standards applicable in France relating to the storage and handling of raw materials (timber, dressed logs, wood pulp, among others) and of semi-finished and finished products; lifting methods; mechanical and manual handling. Hazards encountered: sources, consequences and prevention. Tables and illustrations are used to provide details of actual accidents and of the preventive measures subsequently adopted (falling objects and persons, accidents connected with the use of fork-lift trucks and portable tools, accidents in loading docks, traffic accidents, etc.). (46334)


This loose-leaf collection contains all the safety and health regulations in force in the Federal Republic of Germany concerning the design, construction, installation and use of machinery in the printing and paper industry (such as the law on safety engineering, 1979 version, and the codes of practice and safety regulations laid down by the industrial mutual accident insurance associations). This update contains notifications of compliance labels, comments on the law on safety engineering, and a list of MAC values. Convention 119 and Recommendation 118 of the International Labour Organisation relating to machine guarding and European Economic Community regulations relating to technical working rules and to low-voltage electric work are listed under “International Law”. (42691)


A loose-leaf collection of all the legislation currently in force in the Federal Republic of Germany with regard to the design, construction, installation and use of machinery in the printing and paper industry (especially the 1979 version of the law on safety engineering and the safety rules promulgated by the industrial mutual accident insurance associations). The updates contain alphabetical and numerical lists of applicable standards, list of testing institutions and their seals of approval, notifications of prohibition of dangerous materials, and the official list of MAC values. A section on international law contains Convention 119 and Recommendation 118 of the ILO, conventions on safety, and EEC regulations on working methods and low-voltage work. (46599)


This loose-leaf folder contains all the safety and health regulations in force in the Federal Republic of Germany concerning the design, construction, installation and use of machinery for the printing and paper industries (in particular, the Technical Safety Act, 1979, and the safety regulations issued by the German Industrial Mutual Accident Insurance Associations - Berufsgenossenschaften). The 11th updating supplement contains lists of standards and technical rules, safety regulations and directives, a new list of test institutions (with their compliance marks) and notifications prohibiting certain hazardous materials. The texts of Convention 119 and Recommendation 118 on machinery guarding are also reproduced. (38711)


Sections cover: OSH definitions; basic OSH legislation in the USSR; labour inspection; responsibilities for non-observance of OSH legislation; OSH of women workers; OSH training and education; investigation and declaration of occupational accidents; main causes of occupational accidents in the pulp and paper industry; requirements to be met by premises and workplaces; safety engineering and machinery guarding; personal pro-
tection; electrical safety; microclimatic requirements; industrial ventilation; mechanical, health and toxic hazards in pulp and paper production; OSH measures to be taken during the various production phases (log handling and storage, wood processing, pulp production, rag processing, manufacture of paper and cardboard); fire prevention and fire fighting.


These rules lay down requirements for the design, construction, equipment and use of machines used in the manufacture of paper, cardboard, non-wood pulp (technical chemical pulp) (requirements concerning marking, noise reduction, lighting, protection against gas emissions, dust and harmful agents, fire protection, guards for dangerous parts and units, access, piping, controls, and warning devices, emergency stop devices), special requirements for the construction of different machine parts, personnel requirements (minimum age, instruction, starting up, maintenance, work on moving machinery). Appendix: list of relevant Federal German regulations and standards currently in force.


This loose-leaf folder contains all the safety and health regulations in force in the Federal Republic of Germany concerning the design, construction, installation and use of machinery and equipment for the printing and paper industries, in particular the Act respecting technical equipment in industry (as amended up to 1979), and the safety regulations issued by the Industrial Mutual Accident Insurance Associations. The 6th updating supplement contains lists of prohibited dangerous equipment, testing establishments and new TLVs, and the text of safety regulations or directives on dry cleaning, chlorine, electrostatic-painting, hydrofluoric acid and silk-screen printing installations. The texts of ILO Convention 119 and Recommendation 118 on machinery guarding are also reproduced with extracts from the ILO’s Model Code of Safety Regulations.


This loose-leaf folder contains all the safety regulations in force in the Federal Republic of Germany concerning the design, construction, installation and use of machinery and equipment for the printing and paper industries, in particular the Act respecting technical equipment in industry (as amended up to 1979), and the safety regulations issued by the Industrial Mutual Accident Insurance Associations. The 9th updating supplement contains lists of prohibited dangerous equipment, testing establishments and new TLVs, and the text of safety regulations or directives on dry cleaning, chlorine, electrostatic-painting, hydrofluoric acid and silk-screen printing installations. The texts of ILO Convention 119 and Recommendation 118 on machinery guarding are also reproduced with extracts from the ILO’s Model Code of Safety Regulations.


This recommendation of the National Joint Technical Committee for the Book Industry (of the French National Health Insurance Fund), adopted on 28 Nov. 1980, highlights known hazards (especially falls of objects and crushing injuries) and corresponding safety measures. Main points covered: use of handling equipment; storage; worker protection, training and information. Commentaries on certain points, such as layout of communication ways.


This loose-leaf folder contains all the safety regulations in force in the Federal Republic of Germany concerning the design, construction, installation and use of machinery and equipment for the printing and paper industries, in particular the Act respecting technical equipment in industry (as amended up to 1979), and the safety regulations issued by the Industrial Mutual Accident Insurance Associations. The 6th updating supplement contains lists of prohibited dangerous equipment, testing establishments and new TLVs, and the text of safety regulations or directives on dry cleaning, chlorine, electrostatic-painting, hydrofluoric acid and silk-screen printing installations. The texts of ILO Convention 119 and Recommendation 118 on the guarding of machinery and the ILO Model Code of Safety Regulations are also reproduced.


This loose-leaf folder contains all the safety regulations in force in the Federal Republic of Germany concerning the design, construction, installation and use of machinery and equipment for the printing and paper industries, in particular the Act respecting technical equipment in industry (as amended up to 1979), and the safety regulations issued by the Industrial Mutual Accident Insurance Associations. The 7th revision contains the text of the introduction (with background material) to the Safety Engineering Act and its subsidiary legislation (Administrative Ordinances), a list of approved test laboratories with their identification signs, a list of standards in force, and the new texts of regulations respecting chlorinated hydrocarbons, electrical installations, electrical installations for explosive atmospheres, pressure-jet apparatus, and organic peroxides. The texts of ILO Convention 119 and Recommendation 118 on the guarding of machinery and the ILO Model Code of Safety Regulations are also reproduced.

CIS 80-858 Safety in paper mills - Fourth report of the Joint Standing Committee for paper mills... Health and Safety Executive, H. M. Stationery Office, P. O. Box 569, London SE1 9NH, United Kingdom. 68p. Illus. Price: £2.00. ISBN 0-11-883245 X (In (English)

Profusely illustrated report containing safety rules concerning: working environment (dust control, housekeeping, ventilation, dust explosions), materials handling, chemical hazards and flammable substances, static electricity, lifting operations, machine guarding, emergency stop devices, conveyors and elevators, rag cutters, pulpers, mixers, stock chests, beaters, refiners, paper- and board-making machines (drives, drying section, reel-up operations), finishing machines (calenders, reeling and sitting machines, coating machines, laminating machines, guillotines (photoelectric guards, sweep guards, automatic body-push guards, causes of repeat strokes), baling machines), plant and equipment for roll tissue products, safe access to plant, platforms and gangways, handrails and toe boards. References to British regulations.

CIS 79-1511 Safety requirements for pulpwood concentration yard operations... ANSI (0141-1976), American National Standards Institute, 1430 Broadway, New York, N.Y. 10018, USA, 9 July 1976. 19p. 4 ref. Price: US$3.00. (In (English)

This standard lays down safety requirements for scaling, unloading, transportation, and loading, levelling, receipt, handling, and preparation for rail truck shipment of pulpwood. It includes safety requirements for power tools, prime movers, and other equipment. Contents: definitions; injury reporting; personal protective equipment and first aid; hand tools; environmental conditions and work areas; chain saws; operation of equipment for loading, unloading, storage and retrieval; bundle buckler saws; bucking wood on trucks; protective screens; guards on moving elements.
5.5. Woodworking machines and equipment


This loose-leaf folder contains all the safety regulations in force in the Fed.Rep. of Germany concerning the design, construction, installation and use of machines, materials and production equipment for the printing and paper industries (in particular the 1968 Act respecting technical equipment in industry, and the safety regulations issued by the Industrial Mutual Accident Insurance Associations). The 5th updating supplement comprises lists of standards and regulations, lists of TLVs and texts concerning test markings, electrical installations where there is an explosion hazard, guarding of presses, silos and hoppers, and reproduces directives of the Council of the European Communities concerning safety marking in workplaces. The texts of Convention 119 and Recommendation 118 of the International Labour Organisation are also reproduced, together with extracts from the Model Code of Safety Regulations prepared by the ILO.


This loose-leaf folder contains all the safety regulations in force in the Fed. Rep. of Germany concerning the design, construction, installation and use of machines, materials and production equipment for the printing and paper industries (in particular the 1968 Act respecting technical equipment in industry, and the safety regulations issued by the Industrial Mutual Accident Insurance Associations). The 4th updating supplement comprises texts concerning eye protection, eccentric presses, pressure jet apparatus, industrial trucks, electropolishing, health protection of workers employed in electroplating, plastics converting, paint drying ovens, noise control, TLVs, epoxy resins, polyesters and vinyl chloride. The texts of Convention 119 and Recommendation 118 of the International Labour Organisation are also reproduced, together with extracts from the Model Code of Safety Regulations prepared by the ILO.

5.5. Woodworking machines and equipment


This standard (effective 1 Jan. 1987) applies the general safety requirements of 10 other GOST standards in these machines, and requires that any machine with dangerous moving parts that cannot be seen from the control panel be fitted with audible warning signals that are set off when the controls are activated. Specific requirements are given for 15 types of equipment used to form, tip and pack matchsticks. Applicable electrical safety categories are also cited.

CIS 87-694 Woodworking machines - Table saws. CCOHS Safety Infogram E02, Canadian Centre for Occupational Health and Safety, 250 Main St. East, Hamilton, Ontario L8N 1H6, Canada, 1987, 2p. Illus. (In English, French)

List of safety rules presented in data sheet format.

CIS 87-693 Woodworking machines - Band saws. CCOHS Safety Infogram E03, Canadian Centre for Occupational Health and Safety, 250 Main St. East, Hamilton, Ontario L8N 1H6, Canada, 1987, 2p. Illus. (In English, French)

List of safety rules presented in data sheet format.

CIS 87-692 Woodworking machines - General. CCOHS Safety Infogram E01, Canadian Centre for Occupational Health and Safety, 250 Main St. East, Hamilton, Ontario L8N 1H6, Canada, 1987, 2p. Illus. (In English, French)

List of safety rules presented in data sheet format.

CIS 87-691 Woodworking machines - Radial arm saws. CCOHS Safety Infogram E04, Canadian Centre for Occupational Health and Safety, 250 Main St. East, Hamilton, Ontario L8N 1H6, Canada, 1987, 2p. Illus. (In English, French)

List of safety rules presented in data sheet format.

CIS 87-690 Woodworking machines - Shapers. CCOHS Safety Infogram E07, Canadian Centre for Occupational Health and Safety, 250 Main St. East, Hamilton, Ontario L8N 1H6, Canada, 1987, 2p. Illus. (In English, French)

List of safety rules presented in data sheet format.

CIS 87-689 Woodworking machines - Wood turning lathes. CCOHS Safety Infogram E05, Canadian Centre for Occupational Health and Safety, 250 Main St. East, Hamilton, Ontario L8N 1H6, Canada, 1987, 2p. Illus. (In English, French)

List of safety rules presented in data sheet format.


List of safety rules presented in data sheet format.

CIS 87-687 Woodworking machines - Push sticks. CCOHS Safety Infogram E09, Canadian Centre for Occupational Health and Safety, 250 Main St. East, Hamilton, Ontario L8N 1H6, Canada, 1987, 2p. Illus. (In English, French)

List of safety rules presented in data sheet format.

CIS 87-686 Woodworking machines - Sanders. CCOHS Safety Infogram E08, Canadian Centre for Occupational Health and Safety, 250 Main St. East, Hamilton, Ontario L8N 1H6, Canada, 1987, 2p. Illus. (In English, French)

List of safety rules presented in data sheet format.

CIS 87-388 Notification of the Slovak Occupational Safety Office to ensure the safety of work with hand-held motor-driven chain saws [Slovak Socialist Republic, Czechoslovakia] (Vyhlaska Ceskeho uradu bezpecnosti prace o zaisteni bezpecnosti prace s ru­nymi motoryovymi ret’azovymi pilami). Sbírka zákonů, 15 May 1985, Vol.43, No.10, p.201-204. (In Slovak)

This directive of 25 March 1985 (effective 1 July 1985) covers requirements to be met by electric and internal-combustion saws, responsibilities of enterprises and individual workers, requirements to be met by operators, repair and inspection.


This directive of 25 Apr. 1985 (effective 1 July 1985) covers requirements to be met by electric and internal-combustion saws, responsibilities of enterprises and individual workers, requirements to be met by operators, repair and inspection.


These regulations (effective 1 Jan. 1988) cover: general rules (ergonomically designed handle, maximum weight of 16kg, starting device that automatically returns to the stop position and cannot be locked in running position); protection against mechanical hazards (enclosure of blade, moving guard that automatically covers the lower portion of the blade); riving knife (resistance, adjustment); protection against chips and dust; noise protection (maximum noise levels of 85dB(A)); operating instructions. In an annex: tests using finger-shaped feelers to ascertain that no finger can come into contact with the toothed rim of the blade; detailed advice and commentaries.

CIS 87-28 Machinery and transfer lines for production of matches - Safety requirements for design [USSR] (Stanki i lini dlja proizvodstva spiece. Trebovanija bezopasnosti k konstrukcii). GOST 12.2.026.21-85, Gosudarstvennym kominet SSSR po standartam, Izdatel'stvo standartov, Novopresnenskij per.3, 123840 Moskva, USSR, 1985, 6p. Price: Rbl.0.03. (In Russian)

This standard (effective 1 Jan. 1987) includes: general safety requirements, safety requirements for certain types of equipment, electrical equipment and lighting.
CIS 86-1222 Firewood sawing and splitting machines (Vedmas- 
ker), AFS 1985:16, National Board of Occupational Safety and Health, (Arbeidskyddsstyrelsen), LiberDistribution, 162 89 Stockholm, Sweden, 28 

These regulations (effective: 1 Jan. 1987) lay down that firewood machines should be designed so as to exclude any contact with dangerous machine elements, to prevent the ejection of firewood fragments, to encourage a good work position and to enable the machine to be stopped quickly in case of emergency. On screw-type splitting machines, the firewood should not be free to rotate; the clearance between the screw point and thrust plate should be at least 150mm. In cases where the firewood is clamped between a non-rotoring tool and a thrust plate, the clearance left should be at least 40mm. The feed velocity of the wedge should be limited to 200mm/s. Rules concerning the installation and maintenance of the machine and detailed commentaries with several examples of safety devices.

CIS 85-1142 Woodworking machinery - Nailing machines - Safety 
requirements (Oborudovanie derevoboarbatyvayuschie - Stanki gvez- 
dil'nye - Trebovaniia bezopasnosti). GOST 12.2.026-80, USSR State 
Committee for Standards, (Gosudarstvennym komitet SSR po standartam), Izdatel'stvo standartov, Novopresnenskiy per.3, 123840 Moskva, USSR, 1984, 2p. Price: Rbl.0.03. (In Russian)

This standard (effective 1 Jan. 1985) establishes general requirements for the safe design of nailing machines; prevention of accidental descent of the machine table and of accidental change of position of the striker guide traverse; safety signs and safety colours (yellow colour for traverse), table stopper lift angle must not exceed 45°; guarding of traverse and table adjusting mechanisms; safety devices excluding the hands from the striker zone; electrical safety.


This loose-leaf collection of all the OSH regulations in force in the Federal Republic of Germany relating to the design, manufacture, installation and use of machines and processes for the wood and plastics industries (particu-
larly the 1979 version of the law on safety engineering and the safety rules promulgated by the industrial mutual accident insurance associations). This update contains a list of French standards which are equivalent to German ones (with safety specifications), directives for testing laboratories, notifica-
tions of the banning of dangerous equipment, various legal cases and the list of MAK values for 1984. A section on international law contains Conven-
tion 119 and Recommendation 118 of the ILO concerning machine safety, and the EEC regulations on safe working methods and work with low voltage.

CIS 85-904 Chain saws (Motorkjedessager). Bestillingsnr. 175, Direc-
torate of Labour Inspection, (Direktoratet for arbeidstilsynet), Postboks 8103 

Contents of this directive (effective: 1 July 1981): approval, marking; perfor-
man cations; solidity, handles, chain catcher, noise, vibration, hand 
guards, chain brakes, speed regulators, shut-offs, drive-wheel covers, 
airflow, choice of chains and guidebars, electric chain saws); operating 
instructions; testing for approval; use and maintenance (qualifications and 
ages of operators, starting, fuel, daily checks, first aid and personal protective 
equipment). In an annex: rules for approval and marking.

CIS 85-230 Safety rules for operators of spindle moulders. Depart-
mendement du Travail, Private Bag, Wellington, New Zealand, 1983. 23p. Illus. (In English)

The 5 rules specified for safe working are: only trained operators should 
use the machine; keep spindle moulder in good order; use the guards and 
keep them properly adjusted; adopt safe work methods; dress safety. This 
worker education booklet covers, in addition, guarding requirements and safe work methods, and legal requirements.

CIS 85-229 Wood - Plastics (Holz - Kunststoffe). Haberland W., Meyhak J. Band 2, Schriftenreihe Maschinenenschutz, Deutscher-Fachschriften-Ver-
lag, Felsenstrasse 23, 6200 Wiesbaden-Dotzheim, Federal Republic of Ger-

This loose-leaf compendium contains all the safety and health regulations in effect in the Federal Republic of Germany relating to the design, construc-
tion, installation and use of machinery in the woodworking and plastics industries (such as the law on safety engineering, 1979 version, and the 
codes of practice and safety regulations laid down by the industrial mutual accident insurance associations). This update contains notifications of compliance 
labels, comments on the law on safety engineering, and a list of MAC values. Convention 119 and Recommendation 118 of the International Labour Organisation relating to machine guarding, and European Economic Community regulations relating to technical working rules and to low-voltage electric machines are listed under "International Law".

CIS 84-1528 Machinery and equipment regulations (Machines et appareils: règlementation). Edition OPPBTP No. 248 A 83, Organisme pro-
fessionnel de prévention du bâtiment et des travaux publics, Tour Amboise, 
204 Rond-Point du Pont-de-Sèvres, 92516 Boulogne-Billancourt Cedex, France, Mar. 1983. 144p. (In French)

This book brings together the texts of the principal French laws and regula-
tions on machinery and equipment safety: the law of 6 Dec. 1976 (obligations 
of the user of machinery and equipment); the ordinance of 15 July 1980 (machines and equipment subject to regulation, general health and safety rules, special rules), the ordinance of 20 Mar. 1979 (procedures), texts on the most dangerous machines and equipment (woodworking machines, presses and plate-shears for metal- 
working, tractors for agriculture and forestry).

CIS 84-317 Woodworking machinery - General safety rules for their 
design (Oborudovanie derevoboarbatyvayuschie - Obob'ie trebovania be-
zoopasnosti k konstrukcii). USSR State Committee for Standards, 
(Gosudarstvennym komitet SSSR po standartam), Izdatel'stvo standartov, 
Novopresnenskiy per.3, Moskva D-557, USSR, Apr. 1982. 16p. Price: 
Rbl.0.05. (In Russian)

This USSR standard (effective 1 July 1977; amended in 1982) is applicable 
to all kinds of woodworking machines. It includes: general rules relating to 
safe design; requirements to be met by protective devices, control elements, 
work holding and tool holding devices, lubricating devices, exhaust devices; 
permessible levels of noise and vibration; rules for the design of work 
platforms and of access to them; electrical safety; local lighting; compliance 
with the rules (inspection and compliance testing); requirements for the 
transportation, packing and assembly of machines.

CIS 83-2050 Wood - Plastics (Holz - Kunststoffe). Haberland W., Meyhak J. Band 2, Schriftenreihe Maschinenenschutz, Deutscher Fachschrif-
tenverlag, Felsenstrasse 23, 6200 Wiesbaden-Dotzheim, Federal Republic of 
Price: DM.119.00. ISBN 3-8078-0014-3 (In German)

A loose-leaf collection of all the regulations currently in force in the Federal 
Republic of Germany with regard to the design, construction, installation 
and use of machines and processes for the wood and plastics industries 
(especially the 1979 version of the law on safety engineering and the safety 
rules promulgated by the industrial mutual accident insurance associations). 
The handbook contains: a list of portable circular saws, lists of applicable stan-

dards, lists of testing institutions and their seals of approval, notifications of 
prohibition of dangerous materials, the official list of MAC values, and the 
texts of directive on the converting of plastics, log haulage, and car-
tilgues. A section on international law contains Convention 119 and Recom-
mendation 118 of the ILO concerning machine safety, and EEC regulations 
on safe working methods and work with low voltage.

CIS 83-339 Portable circular power saws for cutting wood and 
similar materials - Prevention of mechanical accident hazards. 
AFNOR NF E 65-100, Association francaise de normalisation, Tour Europe, 

This standard lays down minimum safety requirements for the design and 
construction of portable circular saws in order to prevent accidents of 
machine origin. It does not deal with portable saws when used in a fixed 
position nor does it consider electrical safety. It covers saws intended for 
cutting wood, cork, bone, enobite, plastics and other similar hard materials. Sections deal with: definitions, preventing contact with the sawblade, 
strength of guards, requirements for the soleplate, riving knife, blade flanges, 
handles, general shape, sawdust evacuation, saw weight, blade changing, 
starting device, marking, operating instructions.

CIS 83-40 Hand tools - glaziers' chisels and wood chisels - safety 
requirements. ANSI B209.6-1982, American National Standards Institute, 
1430 Broadway, New York, N.Y. 10018, USA, 8 Mar. 1982. 8p. Illus. (In English)

These safety requirements were approved by the American National Stan-
dards Institute on 8 March 1982, lay down criteria for the design, construc-
tion, testing and use of these chisels and provide guidance for selecting 
and using these tools. Guidance is also given on developing manuals and 
posters and for training personnel in safe practices.
This loose-leaf folder contains all the safety regulations in force in the Federal Republic of Germany concerning the design, construction, installation and use of machinery and equipment for the woodworking and plastics-processing industries (in particular the Technical Safety Act, 1979, and the safety regulations issued by the German Industrial Mutual Accident Insurance Associations - Berufsgenossenschaften). The 9th updating supplement contains data sheets on fluorinated materials and equipment; special protection against static electricity hazards. The texts of ILO Convention 119 and Recommendation 118 on personal fall-arresting equipment and the ILO Model Code of Safety Regulations are reproduced together with extracts from the ILO’s Model Code of Safety Regulations.

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This brochure comprises standards (effective 1 Jan. 1982) dealing with circular saws (for cross-cutting and ripping); veneer guillotines; lathes and spindle moulders for dwelling; sanders; gluing machines and curtain varnishing machines. The safety requirements deal in particular with the guards that should be fitted to these machines.

CIS 82-338 Resolution on the design, construction and use of guillotines in the paper and printing industries. CE Résolution AP(79/2), Council of Europe, Committee of Ministers, Direction de l'information, 67006 Strasbourg Cedex, France, 1980. 7p. (In English, French)

Adopted by the Committee of Ministers on 13 Sept. 1979, this resolution specifies the provisions it recommends the 7 States parties to the Partial Agreement (Belgium, France, Federal Republic of Germany, Italy, Luxembourg, Netherlands and United Kingdom) and the Government of Austria, should bear in mind in drawing up their regulations on the use of guillotines defined in the text. The provisions apply to guillotines designed for cutting reams or piles of sheets of paper or other soft materials and used in the paper and printing industries, but not to multiple-knife guillotines or guillotines incorporated in automated production lines. Sections deal with: description and operation; general design and construction of guillotines; control mechanisms; safety devices (dual hand controls, beam guards, mobile guard devices, mobile guard screens); specifications for electrical circuits, pneumatic controls and hydraulic circuits; general provisions; checking, inspection, and testing; repairs and maintenance.

CIS 82-265 Decree No.81-411 of 15 April 1981 concerning rotating-tool combination machines used principally (without manual removal of the workpiece between each operation) for sawing, milling, and planing wood, cork and similar materials (Décret n°81-411 du 15 avril 1981 sur les machines à outils rotatifs réalisant, à titre principal, la scie (saw), la fraise (milling), la raboteuse (planing) et autres matières similaires. Ministry of Labour and Participation (Ministère du travail et de la participation), Journal officiel de la République française, 29 Apr. 1981, Vol.113, No.101, p.1220-1221. (In French)

This decree (effective 1 Jan. 1982) concerns: guard strength; ergonomic machine design; prevention of any possible contact of rotating tools with a fixed or movable part of the machine; workpiece holding devices; design of movable devices for manual moving of workpiece or tool.


This Decree (effective 1 Jan. 1982) applies to machines which combine several different operations, with manual removal of the workpiece after each operation. Reference to the Decrees concerning safe work with the woodworking machines of which the combination machines perform the separate operations. This Decree prohibits machines where there is any possibility of 2 or more cutter blocks rotating simultaneously; it lays down technical requirements for the work tables forming part of these machines.


The common provisions of this Decree (effective 1 Jan. 1982) prescribe technical requirements and data for the 5 guards which are mandatory (1) for the chain used (rend); (2) for the workpiece feeding device; (3) for the chain not used for such work; they also prescribe requirements and data for the design of a shield against flying particles and a device for holding the workpiece. Supplementary special provisions for hand-guided mortisers and for mortising machines with mechanically moving mortar head.


This Decree (effective 1 Jan. 1982) applies to single-spindle and multi-spindle moulding machines with manual feed of the workpiece or removable feeding device. Sections are devoted to: cutter block; work table and workpiece guide; access to cutting tool; guards; controls. Special requirements for tenoning machines. Detailed technical provisions for the application of this Decree are given in an Order dated 22 June 1981 (J.O. No.166, supplementary issue, 17 July 1981, p.6510-6511).


Decree effective 1 Nov. 1981. General provisions (saws should be guarded, with dynamically balanced pulleys and, for 1,500W machines with <350mm diameter pulleys, with a braking device). Special provisions for different types of band saws (with fixed or tilting table, mobile table or carriage, movable manually or mechanically). Miscellaneous provisions.


Aspects covered by the Decree (effective 1 Nov. 1981): cross-section and balancing of cutter block; constituent materials and mounting of blades; anti-kickback device; guard; system for stopping workpiece feed system; backstop rail.


Aspects covered by the Decree (effective 1 Nov. 1981): frame design; design of machine tables; workpiece guide or fence, cutter block and guard for the part of the cutter block located outside the fence. Special provisions for the surface planers with a vertical cutter block built into the workpiece fence. Miscellaneous provisions.


Decree effective 1 Nov. 1981. General provisions, and detailed provisions for different types of sawing machines with fixed or travelling blade (movable manually or mechanically).

Aspects covered by the Decree (effective 1 Mar. 1982): general design features of the chain saw and its handles; protection of hands from contact with the chain; double controls; anti-kickback design; permissible noise limits; anti-vibration devices. (35652)


This standard, which prescribes safety specifications under the Act of 24 June 1966 respecting technical equipment used in industry, contains requirements for the shape and design of guided riveting knives: technical terminology, detailed dimensions, materials, mounting, testing. Commentaries. (36621)


This booklet gives information on safe work methods and ways and means to avoid hazards. Contents: safe work with glues (type of glue, gluing machines, venting devices); work with glue or varnish (on surfaces of glazable liquids); varnishing equipment and sand papering machines; occupational hygiene in varnishing shops and ventilation design. List of regulations in force in the German Democratic Republic. (66445)


This recommendation of the National Joint Technical Committee for the Rubber, Paper and Cardboard Industries (of the French National Health Insurance Fund), adopted on 28 Nov. 1980, cancels and replaces Recommendation No. 178 of 1976 and 1977, No.932. It relates to hand- and foot-pedal-operated presses and especially motor-driven presses. It indicates the safety measures or devices needed to protect against falls and mechanical risks, particularly crushing of hands (inaccessibility, two-hand control, photoelectric guard), and the conditions to be satisfied by the controls. Instructions for personnel. (64249)


Loose-leaf collection of all safety regulations in force in the Federal Republic of Germany for the design and construction, installation and use of machinery and equipment for the wood and plastics industry, especially the Act representing technical equipment in industry (as amended up to 1979) and the safety regulations of the Industrial Mutual Accident Insurance Associations (Berufsgenossenschaften). This 8th supplement contains the preamble, with background information, to the Act respecting technical equipment in industry and its administrative regulations, a list of test institutions and standardised compliance markings (in conformity with directives of the Commission of the European Communities), new TLVs, directives for laboratory construction and laboratory work, and safety rules for roller coating machines. The texts of ILO Convention 119 and Recommendation 118 on the guarding of machinery and extracts from the ILO Model Code of Safety Regulations are also reproduced. (35980)


These rules, for manufacturers, summarise the main provisions of safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the construction and equipment of these saws: specifications for marking, safety devices and guards to prevent contact with the blade, automatic lowering of blade to starting position, devices for guarding the workpiece, protective measures (2-hand controls, guards), controls, electrical equipment, sawdust removal by local exhaust ventilation, noise control, instructions for use. Appended: list of pertinent regulations and directives. (35913)


These rules, for manufacturers, summarise the main provisions of safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the construction and equipment of these saws: specifications for marking, safety devices and guards to prevent contact with the blade, automatic lowering of blade to starting position, devices for guiding the workpiece, protective measures (2-hand controls, guards), controls, electrical equipment, sawdust removal by local exhaust ventilation, noise control, instructions for use. Appended: list of pertinent regulations and directives. (35912)


These rules, intended for manufacturers, summarise the main provisions of safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the construction and equipment of these saws: specifications for marking, safety devices and guards to prevent contact with the blade, automatic return of blade to starting position, devices for guarding the workpiece, protective measures (2-hand controls, screens, emergency stop devices), controls, electrical equipment, noise control, instructions for use. Appended: list of pertinent regulations and directives. (35903)


These rules, intended for manufacturers, summarise the main provisions of safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the construction and equipment of thicknessers: specifications for marking; design of cutter block; safety devices to guard against contact with the tool or moving parts of the machine and against kickback; controls; chip removal by exhaust ventilation; noise control; instructions for use. Appended: list of pertinent regulations and directives. (35901)


These rules, intended for manufacturers, summarise the main provisions of the safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the construction and equipment of glue spreading machines: specifications for marking, guarding of moving parts, controls, electrical equipment, instructions for use. Appended: list of pertinent regulations and directives. (35875)


These rules, intended for manufacturers, summarise the main provisions of safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the construction and equipment of these machines: specifications for marking, guarding of in-running nips, guarding of feed zone, protection against being hit by moving parts, controls, electrical equipment, instructions for use. Appended: list of pertinent regulations and directives. (35874)

These rules, intended for manufacturers, summarise the main provisions of safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the construction and equipment of these machines: specifications for marking, safety by design, guarding against contact with the tool during various operations, safety guards, guarding of the switch, kickback devices, controls, electrical equipment, chip removal by local exhaust, instructions for use. Appendix: list of pertinent regulations and directives. (35845)


These rules, intended for manufacturers, summarise the main provisions of safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the design and equipment of these machines: specifications for marking, safety measures (cutter block, table lips); guarding of tool, workpiece guides, controls, brakes, chip removal by local exhaust, noise control, instructions for use. Appendix: list of pertinent regulations and directives. (35844)


These rules, intended for manufacturers, summarise the main provisions of safety regulations, standards and other legislation currently in force in the Federal Republic of Germany concerning the construction and equipment of these machines: definitions of technical terms, specifications for marking, guarding of blade, controls. Appendix: list of pertinent regulations and directives. (35843)

CIS 81-639 Machines for sharpening woodcutting saw blades - Safety rules (Starki dlia zatočki derevorezuchčih pi - Trebovanija bezopasnosti). GOST 12.2.048-80, USSR State Standards Committee (Gosudarstvennyj komitet SSSR po standartam), Izdatel'stvo standartov, Novoprosenskij per.3, 123557 Moskva, USSR, 23 June 1980. 5p. Price: Rub.0.03. (In Russian)

Contents of this standard (effective 1 Jan. 1982): general rules (dust removal by local exhaust ventilation, noise limitation, lifting equipment for blades exceeding 600mm diameter); requirements to be met by protective devices; rules for mounting grinding wheels; requirements to be met by control elements and toolssetting; electrical safety; transport, crating and loading of machines; enforcing observance of rules. (35578)


Loose-leaf collection of all safety regulations in force in the Federal Republic of Germany for the design and construction, installation and use of machinery and equipment for the wood and plastics industry, especially the Act representing technical equipment in industry (as amended up to 1979) and the safety regulations of the Industrial Mutual Accident Insurance Associations. This 7th revision contains the text of the introduction (with background material) to the Safety Engineering Act and its subsidiary test laboratories with their identification signs, a list of standards in force, and the new texts of regulations respecting chlorinated hydrocarbons, electrical atmospheres, pressure-jet apparatus, and organic peroxides. The texts of ILO Convention 119 and Recommendation 118 on the guarding of machinery and the ILO Model Code of Safety Regulations are also reproduced. (34902)

CIS 81-40 Safety requirements for gasoline powered chain saws... ANSI B175.1-1979, American National Standards Institute, 1430 Broadway, New York, N.Y. 10018, USA, 6 Feb. 1979. 24p. 3 ref. Price: US$5.50. (In English)

The purpose of this standard, which applies to portable motor fuel-powered chain saws for use primarily in cutting wood, is to establish minimum safety requirements for the manufacture of these saws. Definitions; general specifications (throttle control system, handles, pull-type starter, controls, fuel and oil tanks, exhaust system, saw chain, tensioning, guide, bars, guards, chip discharge, sound levels, kickback, balance, vibration, safety instructions, marking and identification); noise and vibration level test procedures. Appendices: chain saw nomenclature and diagram; spark arrester test procedure; safety precautions for chain saw users. (34686)

CIS 80-1761 Woodworking machinery (Trebeidealgeräte). Bestellnummer. 293, Directorate of Labour Inspection (Direktoratet for ar­beitsstilen), Postboks 8103 Dep., Oslo 1, Norway, 3 Mar. 1980. 40p. illus. (In (Norwegian)

These directives (effective 1 July 1980) cover: correct operation of machinery, automatic cutoff to avoid sudden starting after a power cut, brakes and locking devices, counterweights, blade guides, exhaust systems and soundproofing. Special rules for frame saws, circular saws (irving knife, guards), band saws, surface planers; spindle moulders, routers, tenoning machines, drilling machines, combined machines, mortisers, and belt sanding machines are given. Dimensions for exhaust ducts for various machines are appended. (34193)


Loose-leaf collection of all safety regulations in force in the Federal Republic of Germany for stationary and fixed electric tools rated not more than 600V and employing no unshielded live parts, excluding 600V, for use in accordance with the National Electrical Code (CIS 79-31). Sections are devoted to: components; construction (frame and enclosure, accessibility of live parts, exclusion of foreign matter, mechanical assembly, protection against corrosion, power supply connections, live parts, internal wiring, insulating material, motors, switches and controls, overcurrent-protective devices, capacitors, spacings, grounding); protection against injury to persons (materials, temperatures, rotating members, enclosures and guards, stability, mechanical assembly, switches and controls); specific tools (band saws, grinders, drill presses, jigsaws, jointers, radial-arm saws, sanding machines, shapers, table saws, wood lathes); performance; manufacturing and production tests; rating; marking; instruction manual; instructions pertaining to a risk of injury. (33056)


This standard, approved as an American National Standard, lays down requirements for stationary and fixed electric tools rated not more than 600V and employing no unshielded live parts, excluding 600V, for use in accordance with the National Electrical Code (CIS 79-31). Sections are devoted to: components; construction (frame and enclosure, accessibility of live parts, exclusion of foreign matter, mechanical assembly, protection against corrosion, power supply connections, live parts, internal wiring, insulating material, motors, switches and controls, overcurrent-protective devices, capacitors, spacings, grounding); protection against injury to persons (materials, temperatures, rotating members, enclosures and guards, stability, mechanical assembly, switches and controls); specific tools (band saws, grinders, drill presses, jigsaws, jointers, radial-arm saws, sanding machines, shapers, table saws, wood lathes); performance; manufacturing and production tests; rating; marking; instruction manual; instructions pertaining to a risk of injury. (32280)


Extracts from safety regulations currently in force in the Fed.Rep. of Germany, concerning braking devices on the saw, and the construction and use of band-saw guards. Concerning these provisions, principally those concerning guards on the band and pulleys. The latest regulations also call for an incorporated device for mechanical adjustment of the upper saw guide, with complete enclosure and an automatic braking device on the guide. Examples of machines featuring these safety devices are given. (31649)

Detailed commentary on the new safety regulations VBG 7 (CIS 77-1454) (effective 1 Apr. 1977) in the Fed.Rep. of Germany. The regulations contain only special provisions relating to the machinery and installations, general provisions being given in the basic regulation VBG 1. Aspects dealt with: rotational speed, braking devices, emergency stop control; circular saws (blade guard independent of riving knife, guarding of danger zone at travel­ ling and idling speeds), saw guide, surface planers (slotted table lips), roller coating machines (emergency trip bar, interlocking of guards with roller drive), portable circular saws (automatic guarding of blade), tools (antikickback cutter blocks). (12156)


Loose-leaf collection of all safety regulations in force in the Fed.Rep. of Germany for the design and construction, installation and use of machinery, plant and other production equipment for the wood and plastics industry, especially the Act respecting technical equipment in industry, and the safety regulations of the industrial Mutual Accident Insurance Associations. This 5th updating supplement comprises lists of standards and regulations, lists of TLVs and texts concerning test markings, electrical installations where there is an explosion hazard, guarding of presses, silos and hoppers, and reproduces directives of the Council of the European Communities concerning safety marking in workplaces. The texts of Convention 119 and Recommendation 118 of the International Labour Organisation are also reproduced, together with extracts from the Model Code of Safety Regulations prepared by the ILO. (30036)


These directives (entry into force: 1 Jan. 1980) lay down safety rules for the design, use, adjustment and maintenance of these machines. Contents: definitions; general rules for all saws of this category (blade guards, protection against kickback of piece, riving knife, sharpening and marking of saw blades, etc.); special rules concerning safety devices, feed and ejection devices, controls, blade guide, etc. for frame saws, band saws and circular saws. (29470)


These directives (entry into force: 1 Jan. 1980) lay down safety rules for the design, use, adjustment and maintenance of these machines. Contents: definitions; general rules for all saws of this category (blade guards, protection against kickback of piece, riving knife, sharpening and marking of saw blades, etc.); special rules concerning safety devices, feed and ejection devices, controls, blade guide, etc. for frame saws, band saws and circular saws. (29470)


This loose-leaf data sheet reproduces for rapid synoptic comparison in 2 columns: (a) the text of the United Kingdom woodworking Machines Regula­tions 1974 (Statutory Instrument No.930/1974: CIS 73-1464) and (b) the amendments, section by section, giving a simple interpretation of the Regulations, especially as they apply to the construction industry: guarding of circular sawing machines; multiple rip sawing machines and straight line edging machines; narrow band sawing machines; planing machines; and vertical spindle moulding machines (duties of employers and workers, use and maintenance of guards, bridge guards, push sticks, jigs or holders). Other provisions concern cleaning of saw blades, extraction of chips, mainte­nance, noise, lighting and ambient temperature. Supplementary chapter on chain saws, crosscut saws and hand held circular saws, general principles of guarding, plant layout and training. (29448)


Contents of these directives (entry into force: 1 Apr. 1978): acceptance of models by the Board after passing approval tests; marking of saw and chain blade; manufacture (guarantee covering chain breakage, design of handle, noise and vibration controls, anti-kickback device and chain brake, acceleration adjustment, gear and neutral speeds, stopping devices, guarding of driving sprocket, position of exhaust pipe); choice of chain blade and blade guide; maintenance instructions; compliance tests; qualifications and minimum age for saw operators; starting-up; fuel tank; periodic checks. Texts of directives concerning personal protective equipment for forestry workers, first aid, storing of chain saws, etc. are appended. (28542)


Loose-leaf collection of all safety regulations in force in the Fed.Rep. of Germany for the design and construction, installation and use of machinery, plant and other production equipment for the wood and plastics industry, especially the Act respecting technical equipment in industry and the safety regulations of the International Mutual Accident Insurance Associations. This 4th supplement amends and updates regulations and directives concerning the following subjects: prevention of water pollution, eye protection, eccen­tric presses, fork lift trucks, electroplating, painting, noise control, TLVs and protective measures to be observed in work with arsenic, benzene, lead, flurid (mercury, selenium, polychlorinated dibenzodioxins, etc., resins, polyes­ters and vinyl chloride. ILO Convention 119 and Recommendation 118 on the guarding of machinery and the ILO Model Code of Safety Regulations are also reproduced. (27902)


These safety regulations apply to sawing, cutting and shaping machines (with and without stock removal) and to coating, joining and gluing machines. General provisions on the design, equipment and use of these machines are followed by detailed provisions for each type of machine and safety provisions for their use. The special provisions are mainly concerned with circular saws. Others deal with design and use of tools, use and maintenance: more detailed rules for implementing the regulations, and commentaries. (27959)


These directives (entry into force: 1 July 1976) complete those on circular saws put into operation at construction sites after 1 July 1976 (CIS 76-543). They specify the modifications to be made to old saws to bring them into
and MACs in ppm and mg/m³. There are more substances than on the 1983 list, and some changes have been made. There is more detailed information on known or suspected carcinogens (about 120), dusts (especially quartz and asbestos), organic peroxides, petrol (gasoline), turpentine, pyrolysis products and cutting fluids. "Indicative technical concentrations" are given for about 20 carcinogens or mutagens whose use in industry is unavoidable and for which no MACs have been determined. "Biological limit values" are defined and listed for 16 substances, including hexachlorethane and xylene.


Definition of the maximum allowable concentration (MAC) in the workplace and introduction to the origin, uses (including exposure in pregnancy) and determination of MACs. Comments on the limitation of ceiling values, mixtures of substances, allergies and skin absorption. List of 460 substances with a list of MAC substances and the list of relevant maximum allowed values with respect to the 1982 list. Additional comments on recognised or suspected carcinogens (including medicaments), dusts, organic peroxides, motor fuel, turpentine, pyrolysis products and cutting fluids. For some carcinogenic or mutagenic substances which are indispensable in industry and for which no MACs have been able to be determined, "guideline concentrations" (technische Richtkonzentrationen, TRK) have been established on the basis of available data and safe practice. The "biologically tolerable level of an industrial substance" (biologischer Arbeitsstoff-Toleranz-Wert, BAT) is defined, and values for 14 substances are tabulated.

(40782)


Following an introduction defining the concept of maximum allowable concentration and laying down the conditions under which this concept may be applied in industrial hygiene and occupational health, this brochure gives a list of 350 substances and the limit values (tolerable level of an industrial substance) for MAC substances in ppm and mg/m³. Chapters are also devoted to: evaluation of known or suspected carcinogens, dusts, organic peroxides, motor fuel, turpentine. For a number of carcinogens or mutagens that are unavoidable in industry, indicative technical concentrations have been adopted to permit technical and medical monitoring.

(30643)

CIS 83-608 Directives on prevention of hazards of explosive atmospheres with compendium of examples - Explosion protection directives (Richtlinien für die Vermeidung der Gefahren durch explosionsfähige Atmosphäre mit Beispielsammlung - Explosionsschutz-Richtlinien (EX-RL)). Richtlinien Nr.11, Berufsgenossenschaft der chemischen Industrie, Gaisbergstrasse 7-9, 6900 Heidelberg 1, Federal Republic of Germany, Oct. 1982, 8th supplement. Complete book 130p. + annex 121p. 77th ref. (In German)

A basis for evaluating the hazards of potentially explosive substances, and for the choice of protective measures, is provided: definition of technical terms (explosion hazard zones), instructions for application of the directives, hazard evaluation criteria, protective measures (prevention of formation and ignition of explosive concentrations, limitation of explosion effects). Note is taken of the relevant international conventions, bibliographical references are brought up to date, and a list of approved equipment for detection and monitoring of airborne gases is added. Annex: updated review of application and appropriate protective measures for the use of inflammable gases and liquids, production and use of paints, rubber and plastics, dust formation during work with solid materials, premises for medical use, various installations.

(35911)

Two new tables are added to the tables of occupational diseases set out in the Schedule to the Decree of 31 Dec. 1946 (as subsequently amended): No.10 bis (occupationally-induced respiratory diseases due to chronic acid, and alkaline chromates and dichromates); No.37 bis (occupationally-induced respiratory diseases due to nickel oxides and salts). 12 tables are replaced: No.10 (ulcerations and dermatitis due to chronic acid, alkaline chromates and dichromates); No.15 (occupational diseases (OD) due to amines and their hydroxyhalogenated, nitroso-, nitro and sulfonated derivatives); No.24 (occupational brucellosis); No.37 (occupational skin diseases due to nickel oxides and salts). The other amended tables concern: OD due to penicillin preparations and their salts, and to aspirin preparations for headache (No.41); formaldehyde and its polymers (No.43); wood species (No.47); aliphatic and alcylic amines (No.49); phenyldiazine (No.50); organic isocyanates (No.62); proteolytic enzymes (No.63); allergic disorders (No.66). 


In accordance with the statement of 24 August 1981 by the German Federal Ministry of Labour and Social Affairs, Bonn, Federal Republic of Germany, the list of maximum allowable concentrations published by the Federal German Research Association (CIS 81-1626) now forms an integral part of the new MAK list. The permissible workplace concentration (MAK) is defined, with introductory remarks concerning the origin, object and analytical determination of TLVs, limits exceeded, mixtures of substances, allergic symptoms and skin absorption. A list of some 430 substances with chemical formula and MAK in ppm and mg/m³ is given. Certain MAKs have been modified in comparison with the 1980 list and new substances (particularly carcinogens) introduced. Particular attention is given to carcinogenic substances, dust, organic peroxides, petrol and turpentine. In the case of some carcinogens and mutagens inevitable in industry, for which a MAK value cannot be determined, "indicative technical concentrations" (Technische Richtkonzentrationen - TRK) are given, based on technical data available and the possibilities of technical and medical prevention. Definition of a new category of values, "tolerable biological values of industrial substances in the human body" (BAT), for lead, trichloroethylene and toluene.


The permissible workplace concentration (MAK) is defined, with introductory remarks concerning the origin, object and analytical determination of TLVs, limits exceeded, mixtures of substances, allergic symptoms and skin absorption. A list of some 400 substances with chemical formula and MAK in ppm and mg/m³ is given. Certain MAKs have been modified in comparison with the 1979 list and new substances introduced (particularly as regards their carcinogenicity). Particular attention is given to carcinogenic substances, dust, organic peroxides, petrol and turpentine. In the case of some carcinogens and mutagens inevitable in industry, for which a MAK value cannot be determined (acrylonitrile, arsenic, asbestos, benzene, chromates, nickel, vinyl chloride), "indicative technical concentrations" (Technische Richtkonzentrationen - TRK) are given, based on technical data available and the possibilities of technical and medical prevention.
5.7. Others

CIS 87-1135 Industrial Safety Act and Regulations [Nova Scotia, Canada]. Queen’s Printer, Halifax, NS, Canada, Jan. 1984. 68p. (In English)

Office consolidation of the full text of the Industrial Safety Act and Regulations (Revised Statutes of Nova Scotia, 1967, Chapter 141) and of its amendments up to 1981. The Act includes general provisions, while the Regulations cover: electrical hazards; employment of young people; explosives handling; fire protection; first aid; illumination; ladders; lunch rooms; machinery and guarding; handling and storage of materials; personal protective equipment; rest rooms and sanitation; scaffolds; sitting facilities; hand and portable power tools; ventilation; welding; wood working.

CIS 87-366 List of federal laws, ordinances, rules and notices on occupational safety and health [Switzerland] (Liste des lois fédérales, des ordonnances, des règles et des instructions relatives à la sécurité au travail), Caisse nationale suisse d’assurance en cas d’accidents, Case postale, 6002 Luzern, Switzerland, 1986. 30p. (In French, German, Italian)

List of 109 legal instruments (issued from 1925 to 1985) on engineering safety and on the prevention of occupational accidents in force in Switzerland. Alphabetical subject index.

CIS 87-176 Labour Inspection in the European Community, Campbell S. Health and Safety Executive, Health and Safety Executive, St. Hugh’s House, Stanley Precinct, Trinity Road, Bootle, Merseyside L20 3QY, United Kingdom, 1986. 82p. Illus. 74 ref. Appendices. Price: £12.50. ISBN 0-11-883871-7 (In English)

This report is a guide to the different organisations concerned with labour inspection in the countries of the European Community. The organisation of each inspectorate, its evolution, strengths and weaknesses are described. The main differences and common features are analysed and important issues identified. The report covers especially the construction, food and woodworking industries.


Chapter 1 reviews the principal protective measures prescribed by law for the woodworking industry in Belgium: safety, medical monitoring, pollution in the workplace, personal protective equipment, minimum age, electrical machinery and installations, lifting equipment, spray painting and coating, shelters. Chapter 2 contains detailed explanations of the appropriate regulatory texts on: safety policies, building construction, layout of workshops, fire prevention and control, stationery and moveable machinery and installations, personal protection, inspection by licensing bodies, workers less than 18 years old, workers in isolated workplaces, OSH committees, work on construction sites.


This rule (effective date 10 Feb. 1984) revokes 153 of 194 provisions of the General Industry Standards which use advisory language instead of mandatory language and eliminates repetitious requirements. Amended sections cover: walking and working surfaces; environmental control; hazardous materials; powered platforms, manlifts and vehicle mounted work platforms; compressed gas and compressed air equipment; materials handling and storage; machinery and machine guarding; hand and portable tools; welding, cutting and brazing; paper and textile industries.

CIS 84-1108 Safety standards in logging work (Normas de seguridad para trabajos de aprovechamiento de bosques), Prevención, Jan.-Mar. 1981, No.75, p.5-12. Illus. (In Spanish)

Aspects covered: handling of chain saws (starting, use, transport, maintenance, safety systems); tree-felling; logging, cross-cutting, debarking, log haulage, log piling.


This special issue gives reference to the principal French texts on safety published between May 1982 and May 1983. Essential texts are published in extenso: the Aurox laws (especially those concerning health, safety and working conditions committees); EEC directives on serious accidents; changes in the social security code (accident reporting); changes in the labour code (declaration of disability by occupational physicians); obligations of contractors and foremen in the construction industry; electrical safety in the construction, use and maintenance of electrical energy distribution installations; provisions covering portable equipment; schedules of occupational diseases; safety measures for forklift trucks; safety in governmental operations; law on monitoring and exposure limits of chemical products; periodic inspection of installations consuming thermal energy; classified installations.

CIS 83-1750 Regulations for the protection of young workers - Minimum age for admission to employment (Schutzalterbestimmungen - Sicherheit der jugendlichen Mitarbeiter), Südwestliche Bau-Berufsgenossenschaft, Mitteilungsblatt, 1982, No.2, p.20-23. (In German)

Table of regulations for the protection of young workers effective in the Federal Republic of Germany, showing restriction and prohibition of employment below certain age limits depending on machinery, dangerous substances and various kinds of work.

CIS 83-1487 Industrial health and safety regulations, Workers’ Compensation Board, 5255 Heather Street, Vancouver B.C. V5Z 3L8, Canada, 1980. 532p. Illus. (In English)

Regulations are given for: OSH programmes; accident reports and investigations; places of employment; wharves, docks, etc.; diving; harmful substances; personal protective equipment; machinery, equipment and processes; welding, burning, soldering; hot metal operations; metal cleaning, abrasive blasting, chemical treating, painting, coating; power tools; electrical systems; overhead power lines; garages and vehicle repair shops; mobile equipment; worker transportation; ladders; scaffolds and stages; aircraft operations; construction; asbestos; lead and compounds; plastics, resins; excavations; demolition; underground workings; rock dust; compressed air; explosives; traffic control; rigging; crane, derricks, hoisting equipment; pile driving, dredging; logging; sawmills; woodworking machinery and processes; fire fighting; laundry and dry cleaning; petroleum and natural gas exploration, drilling, production, servicing; window cleaning; laboratories; medical examinations and investigations.

CIS 83-1192 Industrial safety and health law and related legislation of Japan. Japan Industrial Safety and Health Association, Japan Industrial Safety and Health Association, 5-35-1 Shiba, Minato-ku, Tokyo, Japan, 1983. 921p. Illus. Price: Y.18,000. (In English)

English translation of the Japanese legislation in this field as of Aug. 1981. Contents: OSH Act of 8 June 1972; enforcement order of the Act; Ordinances: industrial safety and health; prevention of organic solvent poisoning; prevention of lead poisoning; prevention of tetraethyl lead poisoning; prevention of hazards due to specified chemical substances; safety and health of work under high pressure; prevention of ionising radiation hazards; prevention of anoxia; health standards in offices; prevention of hazards due to dust; authorised inspection agencies; examination of machines and other equipment; industrial safety consultants and industrial health consultants. Construction code for safety devices on presses and shears; construction code for power presses; standards for dust respirators; standards for chain saws; working environment measurement Act and enforcement Order and Ordinance; pneumoconiosis Act and enforcement Ordinance; industrial injury prevention organisation Act; labour standards (excerpt).


This 1980 edition of the standard, approved as an American National Standard on 20 Nov. 1980, updates and augments previous editions (CIS 76-1821). It lays down minimum requirements for the installation of sprinkler systems for fire protection in buildings and adequacy of water supplies to sprinkler systems. Chapters are devoted to: general information; water supplies; system components; spacing, location and position of sprinklers; types of systems; outside sprinklers for protection against exposure fires; hydraulically designed sprinkler systems; high-rise buildings. New additional and amendments concern mainly: water volume limitations, check valves, quick-opening devices, methods of flushing water supply connections. Appendices explain and illustrate the development of some of the principles on which the standard is based, and a section is devoted to woodworking plants. (1970)


Decree amending Tables 42, 44 and 47: occupational diseases due to noise, occupational siederosis and health damage due to certain types of wool. [The text of this Decree is also reproduced in full in Cahiers de notes documentaires, 3rd. quarter 1981, No.104, p.415-420, with a commentary.] (39697)


Contents: general OSH legislation (laws and regulations of the federative republics on OSH and labour inspection); more detailed regulations on: electrical equipment and safety aspects, pressure vessels, hazardous work, fire and explosion protection, hazardous substances used in the chemicals industry, protection against ionising radiation, mining industry, building construction and civil engineering, metalworking, iron and steel industry, printing, glassworks, logging and woodworking industry, agriculture, food industry, transportation. (35751)


Revised and enlarged edition of this publication (CIS 78-292), containing the Occupational Safety and Health Administration's general industry standards (Part 1910, Title 29 of the Code of Federal Regulations) in force on 7 Nov. 1978. The standard is divided into: guarding, shipbreaking, longshoring, walking-working surfaces, means of egress, powered platforms, manlifts and vehicle-mounted work platforms, occupational health and environmental control, personal protective equipment, sanitation, etc., medical and first aid, fire protection, compressed gas and compressed air equipment, materials handling and storage, machinery and machine guarding, hand and portable powered tools and other hand-held equipment, welding, cutting and brazing, special industries (pulp, paper and paperboard mills, textiles, bakery equipment, laundries, sawmills, pulpwood logging, agriculture), electrical safety, and toxic and hazardous substances. Material added concerns mainly diving operations and additional toxic and hazardous substances. Subject index. (3201)

CIS 79-290 Occupational safety law (Arbeitssicherheitsrecht (ASiR)). Spinnarke J., Schork G. Published by C.F. Müller Juristischer Verlag, Akademiestrasse 6, 6900 Heidelberg 1, Germany (Fed.Rep.). 1976. Supplements 1-6, 100p. Price: DM. 118.00. ISBN 3-8114-2577-3 (In (German))

This loose-leaf compendium gives the text of the Federal German Act of 1973 concerning plant physicians, safety engineers and other occupational safety specialists (CIS 74-1185), followed by a commentary, and other West German occupational safety and health legislation. This update supplement contains new, amended or consolidated legislation as of April 1978. Contents: synoptic tables of technical rules; regulations and other statutory instruments concerning arsenic, building work, earthmoving equipment, benzene, occupational diseases, plant physicians, collaboration between inspectors and company's agents, lead, testing of tools, machinery and equipment, fluorine, gases, hazardous substances in industry, waste disposal, woodworking machines, painting, TLVs. (30692)

CIS 79-262 Safety requirements for logging... ANSI 03.1-1978, American National Standards Institute, 1430 Broadway, New York, N.Y. 10018, USA. Standard approved 27 May 1977. 27p. 8 ref. (In (English))

This standard establishes safety practices for logging and other operations associated with the preparation and movement of timber from the point of delivery. Definitions are followed by sections devoted to: clothing, personal protective devices, first aid, hand tools, environmental conditions, work areas, explosives, protection against roll-over, machine access, guards, accidental start-up, guylines, vehicles (stability and reliability, tires, wheels, brakes); tree harvesting (felling, bucking, limbing, delimbing, peeling, personnel transport, truck transport, loading and unloading, storage, etc.). (35668)


This publication contains the Occupational Safety and Health Administration's general industry standards (Part 1910, Title 29 of the Code of Federal Regulations) in force on 1 Jan. 1976. The standards cover: shipbuilding, shipbreaking, ship repairing, longshoring, walking-working surfaces, means of egress, powered platforms, manlifts and vehicle-mounted work platforms, occupational health and environmental control, hazardous materials, personal protective equipment, sanitation, etc., medical and first aid, fire protection, portable and fixed fire suppression equipment, fire protection systems, compressed gas and compressed air equipment, materials handling and storage, machinery and machine guarding, hand and portable powered tools and other hand-held equipment, welding, cutting and brazing, special industries (pulp, paper and paperboard mills, textiles, bakery equipment, laundry machinery and operations, sawmills, pulpwood logging, agriculture, etc.), electrical safety, and toxic and hazardous substances. There is a section/paragraph locator to assist the user in finding any particular numbered paragraph and a comprehensive subject index. (28422)
6. MISCELLANEOUS


Manual to be used in the safety and health education of woodworkers during vocational training offered by schools and industry. It covers: generalities (ergonomics, noise, personal protection, dangerous substances, electricity, legislation in the Federal Republic of Germany, safety institutions); risks and their prevention specific to the industry (workplace and work clothes, tools, portable electrical equipment, warning signs and symbols on electrical equipment, machinery and equipment, wood, plastics and glass, adhesives and solvents, substances used in finishing); safety and health issues specific to individual industry branches and operations. (41412)


Advanced-level textbook on occupational safety and health, covering: the legal situation in Greece; labour inspection; occupational medicine; role of the ILO; investigation and control of hazards in the workplace; ergonomics; statistics (including accident data for Greece); lighting; the thermal environment; ventilation and air purification; hazardous substances (including a check-list for their control and samples of EEC labelling standards); fire and explosion protection (including statistics on fires in Greece, by industry and cause); noise; radiation; preventive maintenance; machinery, tools and equipment; electrical safety; construction safety; OSH in some special industries (food and beverage, paper, printing, tanning, rubber and plastics, automotive repairs, shipyards); asbestos exposure in shipyards. Appendices cover: list of OSH laws in effect in Greece; full text of Law 1568/85 of 18 Oct. 1985 on OSH; interpretive circular on this law; list of international agreements on OSH. (48209)


This 1982 report of the United Kingdom Factory Inspectorate for the manufacturing and service industries covers: standards; occupational health; fire and explosion; transport; noise; maintenance; digital programmable electronic systems; national industry groups; explosives inspectorate; statistical tables. (42893)


The research activities of the sections of occupational safety and of ergonomics and occupational physiotherapy at the Institute are presented. Summaries are grouped under: accident theories and safety analysis; countermeasures for accidents; personal protective equipment; publications. (33758)


Comfort aspects of safety footwear are important because they often affect a worker’s decision not to wear foot and ankle protection. Factors affecting foot comfort considered: fit, absorbency and transmission of sweat and moisture, shock absorbency, and also factors of durability and cost. Results of "breathability" (water vapour transmission rates) and comparison tests of compression or resilience of polyurethane foam, natural rubber, sponge, latex foam and vinyl foam soles are shown in tables, and energy absorption of insole materials using latex foam, polyurethane foam and natural rubber sponge. (33402)


The safety activities and work injuries of 140 Texas, USA, chemical, paper and wood products manufacturing companies were studied by questionnaire. These industries were representative of those having better than average, average, and poorer than average safety performances, respectively. The firms in each group were classified as small, medium or large. The safety programmes and work injuries costs were estimated as 7-14% of the average annual wages of hourly employees in the industries; the costs were lowest for paper products and highest for wood products. A statistical analysis of the data indicated that a subtle combination of highly interrelated safety activities best reduced work injuries. The cost-benefit analysis indicated that the most cost effective activities were: safety rules; off-the-job safety; safety training, orientation, and meetings; and medical facilities, supplies and staff. (25642)


The seminar was convened to take stock of present knowledge on occupational accidents and their prevention, and to discuss how to transfer the results of accident research into practical safety work. The 25 papers were grouped into sections: research strategies, effect of legislative and normative actions, basic behavioural requirements and effect of technological and organisational factors for safety at work. (26128)