

Mice, rats, and hamsters in the Maltoni study were exposed to various levels of vinylidene chloride through inhalation beginning with 10 parts per million parts of air for up to one year, according to Hammond. Kidney cancer developed in some of the mice at an exposure level of 25 ppm but did not appear in rats and hamsters, Hammond reported. At higher doses the mice died before getting cancer.

Maltoni also exposed mice for two years without ill effects to 10 ppm of vinylidene chloride, which Perry Gehring of Dow said is more than the exposure level received by Dow employees working with the chemical now.

"If people were exposed to kidney damage, it would have come out by now; it's obviously not carcinogenic," Gehring, director of toxicology research at Dow, said. He explained that 138 employees, some of them with histories of exposure dating back to 1944 and levels up to 75 ppm of vinylidene chloride, were studied and "the tests have been negative, no health problems."

Gehring emphasized that in Maltoni's study no cancer appeared in the rats and hamsters, which, he said, agreed with results of a nearly finished Dow study that exposed rats to levels of 25 ppm and 75 ppm of vinylidene chloride "with no pathological or carcinogenic damage."

"A key factor is that the effect was seen only in mice," Gehring said. Although the Dow study does not include exposure to mice, Gehring said the company probably would wish to investigate the metabolism of vinylidene chloride in mice.

Asked about the possibility of vinylidene chloride leaching into food from plastic wrap, Gehring said testing, accurate to one-to-five parts per billion, showed a complete absence of the chemical in food packaged in plastic containing vinylidene chloride. "There is absolutely no hazard to the consumer," he said.

Recommended Actions

Selikoff, who is director of the Environmental Science Laboratory at Mt. Sinai, said the industry should take note of Maltoni's findings and look for ways to reduce contact by workers and consumers with the chemical. "I am strongly convinced that this will prove possible," Selikoff said.

To protect the worker he suggested the possibility of using closed systems in production and cited past success with vinyl chloride. As for the use of plastic wrap containing vinylidene chloride and the consumption of plastic-wrapped food, "the problem here lies with the residual monomer and whether it leaches into the food," Selikoff said. "Our experience with vinyl chloride is that this problem, too, can be solved," he added.

Lawrence Garfinkel, assistant vice president of the American Cancer Society in New York, suggested that "the next step is to get the government representatives to follow through." Representatives who attended the medical conference with Maltoni, Hammond, Selikoff, and others included officials from the National Institute for Occupational Safety and Health and the Occupational Safety and Health Administration.

Roscoe M. Moore, technical evaluation chief, NIOSH, said a full-scale epidemiological study to detect any excess mortality among workers at a polymerization plant which at one time produced vinylidene chloride will be launched by NIOSH in about three months.

The study at the BASF Wyandotte Corporation facility in South Kearny, N.J., was requested after preliminary investigations showed some liver changes in employees who worked with vinylidene chloride.

The Maltoni research was sponsored by BASF, AG of West Germany, Dow Chemical Corporation's Europe division,

Imperial Chemical Industries of Great Britain, Solvay of Belgium, and the Italian Government.

Diving Operations

ARTHUR YOUNG ARGUES PROPOSAL WILL NOT AFFECT ENERGY SUPPLY

The United States' energy supply will not be significantly affected by any price increases in commercial diving caused by the Occupational Safety and Health Administration's proposed standard for that industry, according to the post-hearing comments of Arthur Young and Company.

Arthur Young and Company filed its comments in response to criticism of the inflation impact assessment it prepared for OSHA on that agency's proposed standard for commercial diving operations. (Current Report, February 17, p. 1210).

Info Works, a Louisiana consulting firm hired by the Association of Diving Contractors, said during OSHA's public hearing on the proposal in New Orleans, La., that price increases caused by the proposed standard's requirements would affect the U.S. energy supply. Commercial divers are employed in the exploration and exploitation of off-shore energy supplies.

Arthur Young stated that "the demand for commercial diving is relatively inelastic, particularly in the energy supply sector." The company argued that "the user industries would not diminish their use of the services as the price increased."

Underwater Welding

Chicago Bridge and Iron Company, Houston, Tex., declared "a strong objection" to any prohibition of AC underwater welding. The proposed standards do not include such a prohibition, but, according to this company, "interested parties are now proposing to prohibit AC welding underwater."

Miller Electric Manufacturing Company, Appleton, Mass., also argued against prohibiting AC welding underwater. The company's vice president wrote that "to infer that DC is safe and AC is lethal is a gross oversimplification." The company manufactures equipment used in AC underwater welding.

Shallow Water Diving

Several companies submitted comments similar to the statement of Northwest Divers Supply, Inc., Coos Bay, Ore., which said, "As admitted by OSHA, compliance with the proposed safety standard will force some shallow water diving companies out of business. Because of this we are asking that shallow water diving companies with less than 10 full-or part-time shallow water (less than 120 feet depth and 30 minutes ascent time) divers be excluded from the safety standard."

OSHA has said that it expects to issue the final standard around mid-year 1977. The period for submitting post-hearing comments closed February 28.

Asbestos

FIBERS MAY BE RELEASED IN PROCESS OF EXFOLIATION OF VERMICULITE ORE

Inspections of exfoliation processing of vermiculite ore will include evaluating worker exposure to asbestos, the Occupational Safety and Health Administration said after receiving data on asbestos content in the ore.

CIS 76-1892 Effect of polycyclic hydrocarbons on macrophage function (Policiklikus szénhidrogének hatása a makrofágok funkcióira). Fáy E., Kertész M. *Egészségtudomány*, Budapest, Hungary, 1976, Vol.20, No.1, p.84-93. Illus. 33 ref. (In Hungarian)

After a single application of benzo(a)pyrene, benzo(a)anthracene, methylcholanthrene and perylene, the changes occurring in the function of alveolar and peritoneal macrophages were studied in vitro. All inhibited phagocytosis of *Staphylococcus aureus* by alveolar macrophages obtained from rabbit lungs, as well as the migration of the peritoneal macrophages from guinea pigs. They increased the acid phosphatase activity of the lysosomal enzymes of the alveolar macrophages. Concerning induction of these changes, no difference was found between the carcinogenic and non-carcinogenic polycyclic hydrocarbons. Non-carcinogenic polycyclic hydrocarbons exert functional impairing effects. (06003)

CIS 76-1893 Vapor-phase organic pollutants - Volatile hydrocarbons and oxidation products. National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, D.C. 20418, USA, 1976. 411p. Illus. 1,364 ref. ISBN 0-309-02441-2. (In English)

This report, mainly on environmental pollution, contains chapters on metabolism and biological effects of vapour-phase organic compounds in mammals and an epidemiologic appraisal of human effects. An appendix covers toxicity data on occupational exposure to selected substances in addition to sampling and analytical techniques. (06009)

CIS 76-1894 Mechanism of the action of dichloroethane on the embryo of laboratory animals (K voprosu o mehanizme dejstva dihlorëta na na plod eksperimental'nyh životnyh). Vozovaja M.A., Maljarova L.K. *Gigiena i sanitarija*, Moskva, USSR, June 1975, No.6, p.94-96. 8 ref. (In Russian)

Results of research on white rats to investigate the mechanism of the action of dichloroethane on the embryo. After inhalation this substance can affect the uterus and ovaries of non-pregnant females. In pregnant females it can cross the placenta barrier and be deposited in the tissue of the embryo. The authors observed high levels of dichloroethane in the embryo liver and in the females' milk. (06011)

CIS 76-1895 Experimental data on the gonadotoxic effect of Nemagon (Eksperimental'nye dannye o gonadotoksičeskom dejstvii nemagona). Raznik Ja.B., Sprinčan G.K. *Gigiena i sanitarija*, Moskva, USSR, June 1975, No.6, p.101-102. (In Russian)

Nemagon (1,2-dibromo-3-chloropropane) is used as a nematocide for soil dressing in market gardening. Tests on white rats show that one-time doses of 100mg/kg and repeated doses of 10mg/kg have gonadotoxic effects. Damage to the genital organs involves their hormonal functions and causes dysfunction of spermatogenesis and of the oestrous cycle. (06012)

CIS 76-1896 Chlorinated solvents (Les solvants chlorés). Ascher. Caisse régionale d'assurance maladie du Nord de la France, 11 boulevard Vauban, 59024 Lille Cedex, France, 13 May 1975. 19p. 13 ref. Gratis. (In French)

Communication to the Technical Regional Committee for the Chemical Industries (Comité technique régional des industries chimiques), Lille, France. Noting the relatively sharp rise in the number of notified cases of occupational disease due to chlorinated organic solvents (Table 12 of the Schedule of occupational diseases, French Labour Code), the author broadly surveys the whole question of the hazards involved in using these solvents (eczema, poisoning - often with delayed effects), citing case histories. Information on choice of protective gloves. Relevant French legislation. (06016)

CIS 76-1897 Health damage due to vinyl chloride (Erkrankungen durch Vinylchlorid). Minister für Arbeit, Gesundheit und Soziales des Landes Nordrhein-Westfalen, Horionplatz 1, 4 Düsseldorf, Germany (Fed.Rep.), no date. 36p. Illus. (In German)

Offprint of part of the annual report of the Labour Inspectorate of Land North Rhine-Westphalia for 1974. This study conducted by the Chief Medical Inspector of Labour, devoted specifically to the harmful effects of vinyl chloride, first summarises in tabular form the subjective and clinical symptoms observed in 167 cases notified between 1972 and 1974, with duration of exposure in years. Advice is given for differential diagnosis of scleroderma, acroosteolysis, thrombocytopenia, liver damage, angiosarcoma of the liver. Safety measures are suggested: pre-employment medical examinations and regular check-ups; thrombocyte count; safety engineering; TLVs; methods for determination of vinyl chloride concentrations in air. Report of the results of research in a PVC plant; research projects; production of vinyl chloride monomer and of PVC in Germany (Fed.Rep.); 5 case histories of angiosarcoma of the liver; causes of death of workers employed in PVC production, indicating type of cancer. (06020)

CIS 76-1898 Maximum allowable workplace concentrations, 1976 (Maximale Arbeitsplatzkonzentrationen 1976). Mitteilung XII, Committee for Testing Harmful Industrial Substances, German Research Centre (Kommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe, Deutsche Forschungsgemeinschaft), Kennedyallee 40, 53 Bonn-Bad Godesberg 1, Germany (Fed.Rep.), 28 June 1976. 50p. Price: DM.6.00. ISBN 3-7646-1669-5 (In German)

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. The list of some 360 substances with chemical formula and MAK in ppm and mg/m³ is given. Certain MAKs have been modified in comparison with the 1975 list and new ones introduced. Particular attention is given to carcinogenic substances, dust, organic peroxides, petrol and turpentine. In the case of carcinogens and mutagens for which a MAK value cannot be determined (asbestos, benzene, vinyl chloride), "indicative technical concentrations" (Technische Richtkonzentrationen - TRK) are given, based on technical data available and the possibilities of technical and medical prevention. (06035)

CIS 76-1899 Effects and dose-response relationships of toxic metals. Nordberg G.F. Elsevier Scientific Publishing Company, P.O. Box 211, Amsterdam, Netherlands, Feb. 1976. 559p. Illus. Bibl. Price: Glds.155.00. ISBN 0-444-41370-7 (In English)

These proceedings of an International Meeting organised by the Subcommittee of the Toxicology of Metals of the Permanent Commission and International Association on Occupational Health, Tokyo, 18-23 Nov. 1974, comprise the general reports and contributed papers. The report covers concepts, doses, effects and factors influencing the effects of toxic metals. Subjects dealt with in the individual papers: basic concepts, general reviews, reviews on specific metals and compounds (mercury, methylmercury, cadmium, lead, arsenic, arsenic trioxide, iron) and reviews on interactions among metals (synergism and antagonism, trace elements, and interaction of mercury, cadmium, selenium, tellurium, arsenic, beryllium). (06040)

CIS 76-1900 The carcinogenic response in mice to the topical application of propane sultone to the skin. Doak S.M.A., Simpson B.J.E., Hunt P.F., Stevenson D.E. *Toxicology*, Amsterdam, Netherlands, Aug.-Sep. 1976, Vol.6, No.2, p.139-154. Illus. 11 ref. (In English)

Propane sultone was carcinogenic to three strains of mice (CFI, C3H and CBah - a hairless strain) when given as a single application of a 25%wt/vol solution in toluene and also following twice weekly applications of 2.5%wt/vol solution for up to 58 weeks. More limited exposures to 2.5%wt/vol solutions resulted in few skin tumours, although the incidence was not statistically significant. Most neoplasms were papillomas or carcinomas; a small number of mesenchymal tumours of dermal origin also developed. There was a statistically significant increase in systemic neoplasia in CFI and C3H mice. The exposed CFI mice had a higher incidence of neoplasms of lymphoreticular and lung origin, while female C3H mice showed more mammary gland and uterine tumours. In mice exposed to beta-propiolactone as a positive control, neoplasms developed at the site of application, but there was no increased systemic neoplasia in contrast to the findings with propane sultone. (06043)

CIS 76-1901 Toxicokinetics of a thioquinoxaline pesticide: oxythioquinox. (Toxicocinétique d'un pesticide du groupe des thioquinoxalines: l'oxythioquinox). Carrera G., Mitjavila S., Lacombe C., Derache R. *Toxicology*, Amsterdam, Netherlands, Aug.-Sep. 1976, Vol.6, No.2, p.161-171. Illus. 33 ref. (In French)

The absorption and distribution of ³⁵S-labelled oxythioquinox (Morestan) in the rat were studied after administration by stomach tube. Most of the oxythioquinox transported in the body formed complexes with plasma proteins, especially albumins. After intravenous administration, the substance is eliminated very slowly. There is an equilibrium between the plasma and the peripheral compartments. After intragastric administration, there was an increase of radioactivity in epididymal adipose tissue, indicating that the peripheral compartment should include the adipose tissue. (06044)

CIS 76-1902 Ophthalmic toxicology of dichloromethane. Ballantyne B., Gazzard M.F., Swanston D.W. *Toxicology*, Amsterdam, Netherlands, Aug.-Sep. 1976, Vol.6, No.2, p.173-187. Illus. 10 ref. (In English)

A dose of 0.1ml dichloromethane (DCM) caused inflammation of the conjunctiva and eyelids of rabbits, persisting for up to 2 weeks; keratitis and iritis occurred in 2/3 of the animals. Corneal thickness (in vivo) increased by a maximum of 59% at 6h, returning to normal by 9 days. A smaller dose (0.01ml) produced similar but less persistent effects on the conjunctiva and eyelids; keratitis was minor. Corneal thickness increased by 43% at 6h, normal by 9 days. Intraocular tension increased by 33% at 1h, returning to control values by 3 days. Ten-min exposures to DCM vapour at up to 17,500mg/m³ produced no macroscopic changes; mean peak increases in corneal thickness were 13% for 17,500mg/m³ and 5% for 1,750mg/m³; corresponding values for increases in intraocular tension were 18% and 11%. Both effects returned to normal by 2 days. Treatment with Vasocon-A decongestant (containing an antihistamine and an α -adrenergic sympathomimetic) reduced the inflammatory response and the rise in intraocular pressure caused by a splash contamination of the eye with liquid DCM. (06045)

CIS 76-1903 Exposure of animals and man to toluene (Exposition av djur och människa för toluen). Carlsson A., Lindqvist T. *Arbete och hälsa - Vetenskaplig skriftserie* 1976:11, Arbetsarkivsverket, Stockholm, Sweden, 1976. 26p. Illus. 10 ref. (In Swedish)

20 rats were exposed for 60min to ¹⁴C-labelled toluene (1,950mg/m³) in the inspired air. The largest amounts of toluene and metabolites were in the adi-