Paul Jonnaert

Vinyl chloride

4384
J. Thermal Insulation, Vol. 4, Jan. 1981, p. 171–81
DETERMINATION OF RATE OF FORMALDEHYDE RELEASE FROM UREA-FORMALDEHYDE AND PHENOL-FORMALDEHYDE FOAMS
J. Rybicky; S.M. Kambanis
An apparatus and procedures are described for evaluating the rate of formaldehyde release from UF and PF foams. The method consists of two steps: (1) collection of formaldehyde from a box containing a block of foam, (the main subject of this paper), and (2) determination of the collected formaldehyde. The collection step provides the amount of formaldehyde that is released from a given quantity of foam in a given time, and under given conditions of test. 2 refs.

4385
Plast. Rubb. Wkly., No. 897, 25th July 1981, p. 20
EVA INVESTIGATES THE FUMES
Rubber & Plastics Research Assn. of Gt. Britain
Eva Pedersen, an environmental scientist from the Technologist Institut Denmark has been at the Environmental Centre at RAPRA working on pollution problems associated with rubber curing. Samples of fumes generated during simulations of rubber manufacturing are analysed at RAPRA and in Denmark and the results used in environmental improvement programmes.

4386
Chem. Engng. News, 59, No. 27, 6th July 1981, p. 21
NO EFFECT FROM STYRENE IN RAT STUDY
Litton Bionetics Inc.; Chemical Manufacturers Assn.
According to a recent study, styrene administered in the drinking water of rats had no effect on reproduction, and did not increase the incidence of tumours. Neither were any significant gross or microscopic changes observed. A short summary of the study is given.

4387
Adhasion, 25, No. 6, June 1981, p. 253–9
SOLVENT EMISSION
Anon.
German. This article deals with the problems of air-pollution caused by solvent emission in the film printing, painting and laminating industry. Methods of reducing solvent emission are discussed from a technical as well as economic viewpoint and a limit value for maximum solvent emission is suggested. 19 refs.

4388
Toxic. Appl. Pharmac., 58, No. 3, May 1981, p. 363–9
EFFECTS OF PRENATAL AND LACTATIONAL EXPOSURE TO ACRYLAMIDE ON THE DEVELOPMENT OF INTESTINAL ENZYMES IN THE RAT
R. Walden; R.E. Squibb; C.M. Schiller
The results indicate that prenatal and lactational exposure to acrylamide does significantly change intestinal enzyme levels, i.e. increases or decreases, during the early stages of development. Further research is necessary to determine if these changes are reflected in subsequent alterations in the structure or function of the intestine. 19 refs.

4389
Fd. Cosmet. Toxic., 19, No. 3, June 1981, p. 317–33
LIFESPAN ORAL TOXICITY STUDY OF VINYL CHLORIDE IN RATS
V.J. Feron; C.F.M. Hendriksen; A.J. Speek; H.P. Til; B.J. Spit
Vinyl chloride monomer (VCM) was administered by incorporating PVC powder with a high VCM content into the diet or by gastric intubation of a 10 percent VCM solution in soya-bean oil. A variety of neoplastic and non-neoplastic treatment-related liver lesions was found at each of the VCM levels. Tumours attributable to VCM exposure were also found at other sites. The present study showed that VCM is a carcinogen in rats, and that the no-observed-adverse-effect level in rats was lower than 1.7 mg per kg body weight per day, under these conditions. 61 refs.

≏ 54 ppm for 70 kg man breathing 8 M³/day

4390
Toxic. Appl. Pharmac., 59, No. 1, 15th June 1981, p. 130–40
UPTAKE, METABOLISM, AND ELIMINATION OF METHYLENE CHLORIDE VAPOUR BY HUMANS
G.D. DiVincenzo; C.J. Kaplan
Exprimental exposures to methylene chloride (MC) vapour of various concentrations (maximum 200 ppm) were carried out with sedentary nonsmokers for one, or 5 consecutive days, 7½ hours per day. Between 25 and 34% of the absorbed MC was excreted in the expired air as carbon monoxide (CO) during and after exposure. The findings show that end tidal air and blood concentrations of MC and CO are directly proportional to the magnitude of exposure. Blood carboxyhemoglobin saturations are related to the recommended threshold limit values for CO and MC. 25 refs.

4391
Toxic. Appl. Pharmac., 59, No. 1, 15th June 1981, p. 141–8
EFFECT OF EXERCISE OF SMOKING ON THE UPTAKE, METABOLISM AND EXCRETION OF METHYLENE CHLORIDE VAPOUR
G.D. DiVincenzo; C.J. Kaplan
Controlled exposures to methylene chloride (MC) were carried out at 100 ppm for 7½ hours with exercising or smoking individuals. Physical exercise increased the absorption of MC, the biotransformation of MC to carbon monoxide (CO), blood carboxyhemoglobin saturations and the pulmonary excretion of CO compared to those values obtained from sedentary workers. The combined effect of smoking and exposure to MC produced an additive increase in blood carboxyhemoglobin values. 8 refs.

URL 15582

4392
Scand. J. Work Envir. Hlth., 7, No. 2, June 1981, p. 95–100
FORMALDEHYDE EXPOSURE IN WORK AND THE GENERAL ENVIRONMENT: OCCURRENCE AND POSSIBILITIES FOR PREVENTION
R. Niemela; H. Vainio
Serious concern has been expressed about the health hazards relating to the potent irritating and sensitising properties of formaldehyde. Recently published information about the potential carcinogenicity of this compound, has generated further discussion. Therefore, this article briefly reviews the health hazards of formaldehyde, the occurrence of formaldehyde in the environment, and general aspects of the prevention of existing hazards. 24 refs.

4393
Am. Ind. Hyg. Assn. J., 42, No. 7, July 1981, p. A34/A46
FORMALDEHYDE: EVIDENCE OF CARCINOGENICITY
M. Blackwell; H. Karg; A.; Thomas; P. Infante
The National Institute for Occupational Safety and Health (NIOSH) recommends that formaldehyde be handled as a potential occupational carcinogen and that appropriate controls be used to reduce worker exposure. These recommendations are based on studies in which rats and mice exposed to formaldehyde vapour developed nasal cancer. Other adverse health effects caused by formaldehyde are described. The production and uses of formaldehyde, together with those occupations involving exposure to this compound, are given. 27 refs. (NIOSH Current Intelligence Bulletin 34).

4394
Am. Ind. Hyg. Assn. J., 42, No. 7, July 1981, p. 481–5
TOXICOLOGIC EVALUATION OF THERMOPLASTIC RESINS AT AND ABOVE PROCESSING TEMPERATURES
G.K. Sangha; M. Matijak; Y. Alarie
Sensory irritation and acute lethality caused by fumes emanating from a variety of thermoplastics were evaluated using mice. The materials were subjected to temperature ranges from melt processing and above. All materials released irritating fumes with increasing temperatures. Acute lethality, principally due to release of carbon monoxide, occurred at elevated temperatures. 20 refs.

4395
Am. Ind. Hyg. Assn. J., 42, No. 7, July 1981, p. 499–502
WORKER EXPOSURE TO STYRENE MONOMER IN THE REINFORCED PLASTIC BOAT-MAKING INDUSTRY
M.S. Crandall
NIOSH conducted an industrial hygiene survey of workers exposed to styrene monomer in the glass fibre-reinforced plastic boat industry. The objective of the study was to provide extent of exposure data for specific jobs by including plants representing a cross-section of the industry. Industrial hygiene surveys were conducted at seven plants. Overall exposure to styrene monomer ranged from 2 parts per million (ppm) to 183 ppm. Mean exposures for the four primary job categories of hull lamination, deck lamination, small parts lamination and gel coating, were ascertained. 9 refs.

4396
Clin. Allergy, 11, No. 2, Mar. 1981, p. 161–8
TOLUENE DIISOCYANATE INDUCED ASTHMA: EVALUATION OF ANTIBODIES IN THE SERUM OF AFFECTED WORKERS AGAINST TOLYL MONO-ISOCYANATE PROTEIN CONJUGATE
J.M. Danks; O. Cromwell, et al.
Radioallergosorbent testing was used to look for the presence of specific IgE antibody against a para-tolyl-mono-isocyanate human serum albumin conjugate in sera from five groups of subjects. The first three groups consisted of individuals exposed to toluene diisocyanate (TDI) who had been shown by bronchial provocation testing with levls of TDI below the threshold limit value of 0.02 ppm, to have immediate asthmatic reactions, late asthmatic reactions or no respiratory changes at all. The two control groups consisted of atopic and non-atopic individuals who had no respiratory symptoms and no known exposure to TDI. Although RAST showed high ct/min in some of the sera from patients with proven TDI-induced respiratory disease, these levels were not significantly different from controls and appeared to reflect the presence in these sera of high levels of total IgE (greater than 100 mu ml-1). There is no evidence from this study for the presence of specific IgE antibody against a para-tolyl mono isocyanate human serum albumin conjugate in patients with TDI-induced respiratory disease. This finding may reflect absence of antibodies, or that the techniques for their detection are not always effective even when performed by experienced persons, and there is a potential source of error in the interpretation of results when sera contain large amounts of IgE.

4397
Arch. Toxicol., 46, Nos. 3–4, Dec. 1980, p. 295–304
EFFECTS OF SINGLE AND REPEATED EXPOSURE TO THERMO-OXIDATIVE DEGRADATION PRODUCTS OF POLYACRYLONITRILE-BUTADIENE-STYRENE (ABS) ON RAT LUNG, LIVER, KIDNEY, AND BRAIN
A. Zitting; H. Savolainen
The exposures were conducted once, three times or ten times (5 nights/week, 6 h/night). The degradation products included styrene, various nitriles, aldehydes, acids, and a significant aerosol fraction. The oxygen concentration in the exposure chamber was constantly above 20%. The shortest exposures caused a significant reduction of the O-deethylation activity in lung and kidney but not in liver, as well as a decrease in tissue reduced glutathione concentration in liver and kidney but not in lung. These effects well-nigh disappeared during the two-week exposure. In these rats the cerebral glutathione was below the control range. Superoxide dismutase activity increased in liver and brain during the three-day exposure. In liver the activity reached the control value after the two-week exposure but the cerebral activity was significantly lower than in controls. The complex mixture of noxious compounds in the ABS fumes does not readily allow identification of causative agents. Nitrile-dependent histotoxic, peroxidative and reactive metabolite mediated mechanisms may be involved.

Vinyl chloride

4398
J. Soc. Occup. Med., 31, No. 2, Apr. 1981, p. 67–8
DELAYED ONSET OF PULMONARY OEDEMA FOLLOWING ACCIDENTAL EXPOSURE TO ETHYL CHLOROFORMATE
G.T. Bowra.

4399
Ann. Acad. Med. Singapore, 9, No. 4, Oct. 1980, p. 532–5
AN EPISODE OF TRICHLOROETHYLENE POISONING
K.J. Tan; W.H. Phoon
Trichloroethylene is commonly used in industry as a solvent and degreasing agent. An incident is described in which 14 out or 23 workers using trichloroethylene to clean machine parts in an electronics factory suffered symptoms of poisoning, including fainting in 3. Subsequent investigation showed the widespread use of trichloroethylene in that factory: containers of the chemical were also kept exposed. Industrial hygiene assessments revealed vapour levels which exceeded the permissible limit. The implementation of control measures brought the vapour levels to below 50 ppm, a safe level.

4400
JAMA., 245, No. 3, 16th Jan. 1981, p. 243–3(?)
TOXICOLOGY OF UREA FORMALDEHYDE AND POLYURETHANE FOAM INSULATION
J.C. Harris; B.H. Rumack; F.D. Aldrich
Two types of foam insulation are in wide use. Urea formaldehyde foam is a relatively inexpensive, easily installed, and efficient insulation. Toxicity from this insulation is related to release of free formaldehyde into the home. Mild to incapacitating symptoms have been reported in occupants of urea formaldehyde-insulated homes. Airborne formaldehyde levels frequently have exceeded standards set for occupational exposure. The long-term consequences of such exposure are unknown. Because of publicity over the toxicity of urea formaldehyde foam, many physicians and patients have confused urea formaldehyde and polyurethane foam. Unlike urea formaldehyde, polyurethane foam is fully cured before construction. Toxicity occurs only during manufacture and curing. To date, there have been no reports to our knowledge of toxicity in occupants of polyurethane-insulated homes. However, toxicity caused by pyrolysis products may occur during combustion in homes insulated with either type of insulation. This report details 48 patients in whom complete medical data were obtained out of the first 100 patients contacting the Rocky Mountain Poison Centre.

4401
J. Anal. Toxicol., 4, No. 4, Jul.–Aug. 1980, p. 166–74
PHOSGENE IN THE THERMAL DECOMPOSITION PRODUCTS OF POLY(VINYL CHLORIDE): GENERATION, DETECTION AND MEASUREMENT
J.E. Brown; M.M. Birky
An analytical study was made to determine whether carbanyl chloride (phosgene) is formed during the thermal decomposition of poly(vinyl chloride), PVC. Four methods of decomposition were studied: (1) thermal degradation of PVC in a resistively heated furnace, (2) electrical overloading of a PVC clad wire, (3) electrical arcing between electrodes partially covered with PVC, and (4) electric arc initiated flaming combustion in a cup furnace. Results are reported which show that significant quantities of phosgene can be generated from PVC by the electric arc method. Lesser amounts were found in the other scenarios. The measurements, identification and quantification of phsogene in the decomposition product, were obtained through the use of gas chromatography, infrared spectroscopy and mass spectroscopy. While the study was not mechanistic in nature, phsogene is postulated to result from secondary reactions of the PVC products. Reaction mechanisms are suggested.

Phosgene is detected in electric arc decomp'n. of PVC. Traces by other methods.
PVC

URL 15584

4402
Gig. Tr. Prof. Zabol., No. 4, Apr. 1981, p. 20–2
CHANGES IN HORMONE AND LIPID METABOLISM IN CHRONIC OCCUPATIONAL INTOXICATION BY METHYL METHACRYLATE
I.A. Makarov; K.I. Makarenko; N.V. Desyatnikova
Russian. Lipid and hormone metabolites were studied in individuals chronically exposed to methyl methacrylate (MMA) to determine the effects of MMA intoxication in the development of artherosclerosis. Results indicated that during contact with MMA, the patients developed the increased MMA-absorption and an MMA-producing function of thyroid parenchyma. The production of thyroxin was not changed, whereas triiodothyronine of the blood was significantly increased. Simultaneously, the basic metabolite also increased. After the discontinuation of the MMA exposure, all these indexes normalised.