

HERE'S A SUMMARY OF NIOSH RECOMMENDATIONS ON 15 TOXIC AGENTS TO DATE:

Because they have been coming out in bits and pieces and a lot of people can't keep track of them, we are herewith publishing a quick, easy-to-read summary of the NIOSH recommendations on toxic agents, as forwarded to OSHA in criteria documents. Thus far, OSHA has promulgated a standard only on asbestos; all others remain recommendations.

ARSENIC—Occupational exposure shall be controlled so that no worker is exposed to a concentration of arsenic greater than 0.05 mg As/cu m of air determined on a time-weighted average exposure for up to a 10-hour work day, 40-hour work week. Arsenic shall be removed from work areas by vacuum cleaning or wet methods. Cleaning may be performed by washing down with a hose, provided that a fine spray of water has first been laid down. Sweeping or other methods which can stir the dust into the air shall not be used. Arsenic trichloride shall be handled only in enclosed systems sufficient to prevent skin contact and to prevent worker exposure in excess of the environmental standard. Records of all sampling and of medical examinations shall be maintained for at least 20 years after the individual's employment is terminated. Transmitted to OSHA January 24, 1974. Contractor: Tabershaw-Cooper Associates.

ASBESTOS—A permanent Federal standard promulgated by OSHA, effective July 7, 1972, established concentration of no more than 5.0 asbestos fibers greater than 5 microns in length for an eight-hour workday, with no peak concentration to exceed 10 fibers as determined by a minimum sampling time of 15 minutes. This would be reduced to 2.0 fibers by July 1, 1976. The standard also applies to a number of naturally occurring hydrated mineral silicates incombustible in air and separated into filaments.

BERYLLIUM—No worker shall be exposed to a concentration of beryllium more than 2 micrograms of total airborne particulate beryllium per cubic meter of air for an eight-hour day and no peak concentration shall exceed 25 ug/Be/m³ determined by a minimum sampling time of 30 minutes. The recommended standard is intended to protect against development of acute and chronic beryllium disease. A comprehensive pre-placement history and physical exam for all worker applicants shall be provided to include as a minimum a 14x17 chest x-ray, baseline pulmonary function (forced vital capacity and forced expiratory volume at one second) and a baseline weight. Respiratory protective devices shall be used any time the actual or projected level of beryllium will exceed an eight-hour time-weighted average of 2 ug/m³. Sampling, monitoring and recordkeeping requirements are specified on monthly and quarterly basis. Transmitted June 30, 1972.

CARBON MONOXIDE—Occupational exposure to carbon monoxide shall be controlled so that no worker shall be exposed at a concentration greater than 35 ppm determined as a time-weighted average exposure for an eight-hour workday, as measured with a portable, direct-reading hopcalite-type carbon monoxide meter calibrated against known concentrations of CO, or with gas detector tube units certified under Title 42 of the Code of Federal Regulations, Part 84. No level of carbon monoxide to which workers are exposed shall exceed a ceiling concentration of 200 ppm. Because employees with overt cardiovascular disease may not be protected by an occupational exposure to 35 ppm of CO, a medical program should be instituted consisting of pre-placement and periodic exams, with special attention to the cardiovascular system and to medical conditions which could be exacerbated by exposure to CO. Transmitted August 3, 1972.

CHROMIC ACID—Occupational exposure to chromic acid shall be controlled so that no worker is exposed either to: (1) a concentration of chromic acid greater than 0.05 milligram as chromium trioxide per cubic meter of air determined by a time-weighted average exposure for an eight-hour workday, 40-hour work week, or (2) a ceiling concentration in excess of 0.1 milligram as chromium trioxide per cubic meter as determined by a sampling time of 15 minutes. Records of medical exams and sampling must be maintained for at least 20 years. Transmitted July 17, 1973. Contractor: George D. Clayton & Associates.

COKE OVEN EMISSIONS—Due to absence of reliable dose response data, the report does not recommend an environmental air standard as a safe exposure level. Instead, it recommends a combination of respiratory protection and "work practices" or operating procedures designed to reduce the emissions and the workers' exposure. The existing Federal standard is 0.2 mg/cu m.

HOT ENVIRONMENTS—Employee exposure to heat in the workplace should be controlled by requiring compliance with a work practice standard. Work practices should be initiated when an employee is exposed continuously for one hour or intermittently for two hours and the Wet Bulb Globe Temperature exceeds 79°F for men and 76°F for women. The work practices should insure that the employee's body temperature does not exceed 100.4°F. No employee shall be permitted to work without protective observation at high heat stress levels. Transmitted June 30, 1972.

INORGANIC LEAD—Occupational exposure to inorganic lead shall be controlled so that workers shall not be exposed at a concentration greater than 0.15 mg Pb/m^3 determined as a time-weighted average exposure for an eight-hour workday. This is based on the relationship between airborne lead and the biochemical indices of effect, especially blood lead. Biological monitoring shall be made available to all workers subject to exposure to inorganic lead. It consists of sampling and analysis of whole blood, or alternatively, of urine for lead content. Unacceptable absorption of lead posing a risk of lead poisoning is demonstrated at levels of $0.080 \text{ mg Pb/100 g}$ of whole blood or greater, or at levels of 0.20 mg Pb/liter of urine (with urine specific gravity corrected to 1.024) or greater. Transmitted January 5, 1973.

INORGANIC MERCURY—Occupational exposure to mercury shall be controlled so that workers are not exposed at a concentration greater than 0.05 mg Hg/cu m determined as a time-weighted average exposure for an eight-hour workday. Inorganic mercury includes elemental mercury, and all inorganic mercury compounds and organic mercury compounds other than ethyl and methyl mercury compounds. Employers shall monitor environmental levels of inorganic mercury at least every six months. Transmitted August 13, 1973. Contractor: Tabershaw-Cooper Associates.

NOISE—A maximum exposure of 85 dBA is recommended, but the effective date is deferred pending an extensive feasibility study and limitation of mandatory audiometric testing to new employees, along with a recommendation that employers consider the merits of a full hearing conservation program. A study of the quantity and quality of the health manpower for audiometric testing is needed before further recommendations can be made. The present Federal standard is 90 dBA. Transmitted August 10, 1972.

SULFUR DIOXIDE—Occupational exposure to sulfur dioxide shall be controlled so that workers shall not be exposed to concentrations greater than 2 ppm of air (5 milligrams per cubic meter of air) for an eight-hour work day. Medical exams shall emphasize the eyes and cardiopulmonary system, with particular attention focused on complaints of mucous membrane irritation and cough. Transmitted February 11, 1974. Contractor: Tabershaw-Cooper Associates.

TOLUENE—Occupational exposure to toluene shall be controlled so that workers shall not be exposed at a concentration greater than 100 ppm of air (375 milligrams per cubic meter of air) for eight-hour day, with a ceiling of 200 ppm (750 milligrams) as determined by a sampling time of 10 minutes. Smoking shall be prohibited in all areas where there is toluene. If exposure to other chemicals also occurs, for example from contamination of toluene with benzene, provisions of any applicable standard for the other chemicals shall also be followed. Transmitted July 23, 1973. Contractor: George D. Clayton & Assoc.

TOLUENE DIISOCYANATE—Occupational exposure to TDI shall be controlled so that no worker shall be exposed to a concentration of more than 0.005 ppm (0.036 mg/cu m) for any eight-hour workday or for any 20-minute period to more than 0.02 ppm (0.14 mg/cu m). Workers already sensitized should not be exposed to any amount of TDI. The standard is based on the effects on the respiratory tract and is designed to prevent acute and chronic irritation and sensitization of workers. Transmitted July 23, 1973. Contractor: Tabershaw-Cooper Associates.

TRICHLOROETHYLENE—Occupational exposure to trichloroethylene shall be controlled so that workers will not be exposed at a concentration in excess of 100 ppm determined for eight-hour workday, as measured by a minimum sampling time of 10 minutes. No worker shall be exposed to a peak concentration in excess of 150 ppm, as measured by a maximum sampling time of 10 minutes. The recommendations would not alter the existing Federal standard but would lower the ceiling to protect workers from eye irritations. Transmitted July 23, 1973. Contractor: George D. Clayton & Assoc.

ULTRAVIOLET RADIATION—Technology to measure ultraviolet energy for compliance with the recommended standard is inadequate, so work practices are recommended. For the ultraviolet spectral region of 315 to 400 nm, total irradiance incident on unprotected skin or eyes, based on either measurement data or on output data, shall not exceed 1.0 mW/cm^2 for periods greater than 1000 seconds, and for exposure times of 1000 seconds or less the total radiant energy shall not exceed 1000 mW sec/cm^2 (1.0 J/cm^2). For the ultraviolet spectral region of 200 to 315 nm, total irradiance is described in a more complex formula in the document. Transmitted December 20, 1972. Contractor: Franklin Institute.

Note: These summaries are obviously incomplete and include only a few of the major highlights in the criteria documents from which they were extracted. The reader is thus invited to consult the full documents, available from NIOSH, for a more complete summary of environmental, medical, housekeeping, record-keeping and other requirements.