

Toxicological and epidemiological studies are cited in a reevaluation of air quality criteria and guides for sulfur dioxide and suspended particulates in Sweden. Toxicological experiments indicate that SO₂ alone does not induce significant physiological or histopathological changes until the concentration exceeds that found in urban air by at least 10 times. Experiments showing a synergistic effect between SO₂ and particles in producing pulmonary effects are based on much higher pollutant concentrations than those in the environment, and new experiments in which the dose-response relationship for various cellular reactions can be established are necessary. Although epidemiological studies reveal dose-related associations between exposure to air pollution, quantified by SO₂ and particulate measurements and certain health effects, there is no information which can provide an exact dose-response relationship for either SO₂ or particulate matter, or a combination of the two. That observed effects on health might be due to agents other than SO₂ and particulates cannot be excluded. An appendix reviews monitoring techniques and list measurements of SO₂ and particulates in Sweden.

47242

APTIC NO. 65117

Denbsky, G.

RAPID WET ASHING OF BIOLOGICAL MATERIAL WITH HYDROGEN PEROXIDE UNDER HIGH TEMPERATURE AND PRESSURE ALMOST WITHOUT LOSS. (*Schnelle und nahezu verlustfreie Nassveraschung biologischen Materials mit Wasserstoffperoxid unter Anwendung hoher Temperaturen und Drucke*). *Z. Anal. Chem.*, vol. 267:350-355, 1973. Translated from German, 13p. (Presented at the Trace Analysis Meeting, Erlangen, Germany, April 2-5, 1973.)

A technique for wet ashing of biological material with hydrogen peroxide under high temperature and pressure is described which allows for the mineralization of starting weights of 5-10 g of sample within a total working time of 30 min and with only slight losses due to adsorption on the vessel wall. The use of H₂O₂ for mineralization results in aqueous solutions which do not contain excessive amounts of either acids or bases and which are therefore well suited for subsequent chemical analysis. The liquid, pasty, or solid substances are decomposed in specially constructed high-pressure vessel which is heated to 370 C in a salt-peter (potassium nitrate) bath or electric furnace. Fats and hydrocarbons can also be decomposed but in amounts less than 1 or 2 g, otherwise carbon is precipitated. Digestion experiment results are given for a variety of animal and vegetable foodstuffs, and recoveries are reported for various tracer elements in rye bread mixtures that were mineralized.

47243

APTIC NO. 68778

Dingeon, B. and C. Collombel

AIR POLLUTION FROM LEAD ADDED TO GASOLINE. (*Incidence du plomb ajoute a l'essence dans la pollution atmospherique*). *Text in French. Lyon Pharm.*, 24(4):539-544, 1973. 30 refs.

General hygienic and toxicological problems of lead added to gasoline are discussed. Lead emitted by motor vehicles pollutes the air especially in cities and along highways, and is accumulated by soil and plants. The lead levels found in the blood of subjects living in cities and near highways was significantly higher than in rural dwellers. Close correlation between the atmospheric lead concentration and the carbon monoxide concentration as well as the traffic density was established, which is indicative of traffic being the source of atmospheric lead. The effect of traffic on the atmospheric lead concentration extended over a distance of up to 4 km. The lead, emitted by motor vehicles in the form of submicron particles, is retained in the organism at rates of 5-10% following ingestion, and at rates of 30-50% when inhaled. Lead is partially excreted by the liver, kidney, hair, and nails. Some 95% of the retained lead is found in the blood, and accumulation in the bones with potential mobilization due to increases in the

corticosteroid level was observed. Exposure to lead can be diagnosed by basophil granulation test, urine delta-aminolevulinic acid test, and delta-aminolevulinic acid dehydratase test.

47244

APTIC NO. 69136

Eaton, W. C., Carl M. Shy, John F. Finklea, James N. Howard, Robert M. Burton, George H. Ward, and Ferris B. Benson

EXPOSURE TO INDOOR NITROGEN DIOXIDE FROM GAS STOVES. *Preprint, Environmental Protection Agency, Research Triangle Park, N. C., Human Studies Lab.*, 13p., Jan. 1973. 11 refs.

The effect of indoor exposure to nitrogen dioxide from gas stoves was assessed by a prospective survey of acute respiratory disease among middle-class families living in a suburban fringe community where ambient pollutant exposure was low. The families were queried at 2-week intervals from October 1970 through May 1971 concerning common respiratory ailments. A total of 146 participating families were grouped according to natural gas cooking families (59.6%) and those not using gas cooking (40.4%). These groups were similar with respect to distribution of cigarette smokers, and percent of families who changed address during the previous 5 yr. Illness experience of the two groups was compared for four family segments (mothers, fathers, schoolchildren, and pre-schoolchildren). All family segments, with the exception of pre-schoolchildren, in homes using natural gas cooking reported significantly more acute lower respiratory illness. Indoor monitoring studies in one home for 7 days showed maximum NO₂ concentrations at the stove of 0.40-1.0 ppm during cooking as opposed to zero levels prior to cooking. The highest value occurred when the oven and three surface burners were used for about 75 min (hood-type exhaust operating). Indoor NO₂ exposures were related to gas flow rate, duration of burning, and distance from the stove.

47245

APTIC NO. 68146

Einbrodt, H. J. and H. Kinny

HEALTH HAZARDS IN MAN DUE TO EMISSIONS FROM CONVENTIONAL POWER PLANTS.

(*Immissionsschaeden beim Menschen durch Konventionelle Kraftwerke*). *Text in German. Strahlenschutz Forsch. Prax.*, vol. 12:98-105, 1973. 9 refs. (Presented at the Association of German Radiation Protection Physicians and the Association for Radiation and Environmental Research, 12th Conference, Munich and Nuernberg, West Germany, Oct. 8-9, 1971.)

A hygienic assessment of a thermal power plant is presented with respect to possible health hazards of the emissions generated by such power plants. The suspended dust concentration around the power plant averaged 0.118 mg/cu m against 0.095 mg/cu m measured before the power plant was put into operation. The ferric oxide, calcia, and lead content in the suspended dust increased considerably due to the operation of the power plant. The ferric oxide, calcia, silica, and alumina content present in the dust around the power plant is regarded as harmless for the population living there. Lead, carbon, soot, and graphite, the chief components of the suspended dust, are however, hazardous for the population. Carbon, soot, and graphite may cause focal emphysema in the general population as evidenced in subjects living in the Ruhr area. Among the gaseous pollutants emitted by power plants, sulfur dioxide and sulfur trioxide are most harmful due to their interference with the respiratory function and their strong irritative action.

47246

APTIC NO. 68180

Fang, S. C. and E. Fallin

UPTAKE, DISTRIBUTION, AND METABOLISM OF INHALED ETHYLMERCURIC CHLORIDE IN THE RAT.

Arch. Environ. Contam. Toxicol., 1(4):347-361, 1973. 22 refs.