

- 789 Commuter Exposure to Atmospheric Lead. V.J. Konopinski and J.B. Upham. Arch. Environmental Health 14, 589-593 (April, 1967).

A method of sampling for atmospheric particulate lead from a moving vehicle is described. Commuter exposure to lead levels measured in Cincinnati, Los Angeles, and San Francisco presented. Mobile sampling was conducted on representative traffic arteries in each city during the morning and afternoon traffic rush and during midday. Background levels were also measured on rural routes. Mean concentrations ranged from 9 micrograms/cu.m. to 38 micrograms/cu.m. in weekday samples from downtown and freeway routes, and from 2.8 micrograms/cu.m. to 5.8 micrograms/cu.m. for rural roads. In Los Angeles on the Hollywood and Hollywood Freeways and at the "stack", 11 of 14 samples had concentrations greater than 40 micrograms/cu.m., and the maximum single measurement was 71.3 micrograms/cu.m. There are 8 references.

-- Authors' summary

- 790 Atmospheric Lead Concentrations as a Function of Meteorology. K.G. Blemel. Arch. Environmental Health 14, 594-603 (April, 1967).

Through the use of curvilinear numerical programming techniques, it was possible to establish basic relationships between concentrations of atmospheric lead particulate and the concurrent meteorology. Once the mathematical model was maximized to desired or possible levels, predictions were made of the extreme concentrations possible under existing conditions. The model derived for samples at the Philadelphia International Airport was a combination of an inverse logarithm of the wind speed and directional coefficient of the wind vector. The effect of inversions or atmospheric stability on concentrations generated over a flat topographical area was minimal when averaged over 48 hours. Under special conditions, concentrations of lead particulate in the atmosphere can be expressed as a function of wind, emissions, and traffic patterns. Ideal conditions of flat terrain and long sample duration can be investigated by curvilinear parametric numerical techniques with the use of a mathematical model developed through statistical techniques of correlation. It seems very worthwhile to investigate further the meteorological dispersion of vehicular lead emissions in a central city location with comprehensive traffic and meteorological data. Perhaps, through such investigations the contribution of automotive exhaust to atmospheric pollution can be estimated with the use of lead concentrations as the indicator. There are 13 references.

-- Author's summary

- 791 Instrumentation for the Measurement of Low Velocities With a Pitot Tube. G.M. Hama and L.C. Curley. Am. Ind. Hyg. Assn. J. 28, 204-207 (May-June, 1967).

The advantages of the pitot tube for stack and duct sampling include: ruggedness, reliability, ability to be used in dusty, corrosive, or hot atmospheres, and no need of calibration. The main disadvantage is its lack of preciseness in velocities below 700 to 1000 fpm. A simple electrical sensing manometer which retains the trouble-free characteristic of a U-tube manometer has been developed. This manometer will give repeatable readings within 0.0003 inch with different observers. Preliminary wind tunnel tests have indicated that velocities as low as 250 to 300 fpm can be measured.

-- Authors' abst.

- 792 Aerosol Sampling With a Side Port Probe. D. Lundgren and S. Calvert. Am. Ind. Hyg. Assn. J. 28, 208-215 (May-June, 1967).

A most important consideration in determining particulate concentration in a gas stream is that of obtaining a true sample. This report describes an experimental investigation of a side port probe and a conventional sampling probe for obtaining aerosol samples from a duct. Sampling bias for both types of probe was determined experimentally over a wide range of test conditions using monodispersed aerosols from 0.5 to 10 microns in diameter. Sampling bias was shown to be a function of the inertial impaction parameter and duct to probe velocity ratio. Experimental results are presented. Operational limits over which a sampling probe can be used are shown as a function of the permissible sampling error. There are 8 references.

-- Authors' abst.

#### PREVENTIVE ENGINEERING

- 793 Performance of Respirator Expiratory Valves. W.A. Burgess and D.E. Anderson. Am. Ind. Hyg. Assn. J. 28, 216-223 (May-June, 1967).

A survey of the performance of expiratory valves used in air-purifying respirators is presented. Valves chosen for the study represented the four major valve design types in use in this country.