

COMMUNITY AIR HYGIENE

- 201 Animal Exposure Chambers in Air Pollution Studies. R.G. Hinners, J.K. Burkart, and G.L. Contner. Arch. Environmental Health 13, 609-615 (Nov. 1966).

The main objectives in the design and construction of an animal inhalation facility are perform and ease of operation. Any design features, however, that would result in poor performance should be eliminated regardless of contribution to ease of operation and maintenance. The following requirements were considered mandatory in the design and installation of the animal exposure facility described in this report: (1) a source of clean filtered air supply; (2) a constant flow of air; (3) controls to vary air flow over a suitable range; (4) instruments for accurately metering air flow; (5) apparatus for injecting an aerosol or gaseous contaminant into the input air stream; (6) uniform distribution of the input air stream throughout the exposure zone; (7) an air supply cooling system to maintain a constant exposure chamber temperature, despite the animal heat load and variations in ambient temperature; (8) signal devices to indicate failure of operating equipment; (9) provision for exhausting air from the chambers; (10) maintenance of a slight negative pressure to prevent outward leakage from the exposure units; (11) a means of conveniently cleaning the exposure chambers; (12) facilities for taking representative samples of the exposure chamber atmosphere; (13) appropriate sampling ports from which any part of the exposure chamber may be probed; (14) ease of access to exposure chamber interior, (15) suitable observation window and (16) automatic control and recording of exposure chamber variables, such as temperature, humidity, and contaminant concentration. The preceding conditions were all incorporated into current long-term study. Seven references are given.

-- Authors' summary

- 202 Bacterial Air Pollution From Activated Sludge Units. C.W. Randall and J.O. Ledbetter. Am. Ind. Hyg. Assn. J. 27, 506-519 (Nov.-Dec. 1966).

Large numbers of potentially pathogenic bacteria were collected from the air surrounding activated sludge units, and many persisted for a considerable time and distance. Significantly, the airborne enteric pathogens were greatly outnumbered by bacteria of proved pathogenicity in the respiratory tract. *Klebsiella pneumoniae* was the pathogen isolated most frequently, and several studies concerning the spread, longevity, and factors of pathogenicity of this organism were conducted. The potential health hazard of the emitted respiratory pathogens was considerably increased by the fact that a large percentage of the aerosol particles transporting viable bacteria were of a size permitting lung penetration. There are 31 references.

-- Authors' abstr.

- 203 Effects of Environment Upon Respiratory Function. II. Daily Studies in Patients with Chronic Obstructive Lung Disease. W.S. Spicer, Jr., W.A. Reinke, and H.D. Kerr. Arch. Environmental Health 13, 753-762 (Dec. 1966).

The effects of selected meteorologic changes and air pollutants upon the mean daily values of ten respiratory function tests obtained from small groups of patients with chronic bronchitis and bronchial asthma has been assessed for two seven-week study periods. A logical biostatistical approach, which places chief reliance upon the multiple regression technique, has been used to sort out major effects from a mass of data. The most important environmental-physiologic relationships appeared to be those associated with temperature, wind speed, barometric pressure and sulfur dioxide levels. Two distinct patterns of physiologic response were found. In the final analyses, total lung capacity (TLC) and residual volume (RV) were used to exemplify the volume group and airway resistance at functional residual capacity and percentage of the forced vital capacity exhaled in three seconds (FEV_{3.0}%) the "resistance" group. Airway resistance and TLC increased as temperature decreased. Airway resistance increased and FEV_{3.0}% fell in both patient groups and RV increased in patients with asthma either 14 or 38 hours (or both) following a rise in sulfur dioxide in the second study where the range of sulfur dioxide levels was greater than in the first study. Airway resistance increased and FEV_{3.0}% decreased 24 hours after a fall in barometric pressure while TLC and RV rose in patients with chronic bronchitis 14 hours after a drop in wind speed. Particular care has been taken to point out that a direct cause and effect relationship cannot be implied from these significant findings. There are 12 references.

-- Authors' summary

- 204 Air Pollution and Asthma in Yokkaichi. K. Yoshida, H. Oshima, and M. Imai. Arch. Environmental Health 13, 763-768 (Dec. 1966).

In Yokkaichi (in the central part of Japan along the Pacific coast) where electric power stations, oil refineries, and petrochemical plants exist, growing numbers of bronchial asthma patients have been observed since the plants were put in operation. At Isozu district, where air pollution is the most severe, the prevalence of bronchial asthma involved 2.3% of the total population and