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as a janitorial handbook. Modern management is not only concerned with the costs of sanitati maintenance, but with the economies in production, the support of quality, and the promotion employee morale, which result from clean and orderly work places. Rising capital investmer in better plants, machines, and personnel facilities not only warrant but require maintenance similar caliber. Just as a clean and attractive home is evidence of a family's pride, thrift an energy, so do clean factories, stores, office buildings, schools and institutions reflect compe of management; furthermore, a sense of social responsibility is thereby exemplified which is essential element in our rising standards for living and working. If one in thirty represents conservative ratio of those engaged in cleaning maintenance to those employed, we are concer with the labor of over 2,000,000 persons. With 19,200,000 man (and women) hours applied ea working day to the cleaning of buildings and equipment, at a labor cost of $1.50 per hour, in 25(working days, the annual labor cost is estimated to be $7,200,000,000. Well planned and organize dustrial sanitation pays its way, not necessarily by reducing expenditures for sanitary maintenanc (although this is frequently the result) but by enabling production and machine maintenance to b done with greater efficiency, and employees to work in greater comfort and safety. The office building, commercial establishment, public facility, or institution differ from the industrial pl only in that the rendering of service or the performing of desk work takes the places of produc mechanical maintenance becomes a lesser function, and sanitation maintenance increases in importance, thus placing greater emphasis on the efficiency and economy of the sanitation func and calling for more expert supervision. In the non-industrial operation, mechanical and sanit maintenance may be more readily combined under one supervision, as in a school system. Va methods of dust collection and removal, even though efficient in the range of 80 to 99 plus perc still permit substantial quantities of dusts to escape or remain in the atmosphere and to be dep on surfaces from which they must be removed. While those who are maintaining office and inst tutional buildings do not have the massive dust problems of some industrial plants, they still ha the continual load of dust characteristic of all urban areas, varying usually from 1 to 10 millio particles per cubic foot. Quantitatively, fairly clean city areas may have solids loadings in the atmosphere from 0.4 to 0.8 grains per 1,000 cu.ft. of air; city industrial sections may range f 1.0 to 2.0 grains, and heavy industrial areas from 4.0 to 80 grains. On the basis of the inter- mediate loading of 1.0 grain per 1,000 cu.ft., one pound of soil would be carried into an indust enclosure with every 7,000,000 cu.ft. of outside air. While some of this air-borne soil will be carried out by the air change, some of it joins the dusts and fumes being generated within and creates the condition which normally requires each day some form of cleaning of horizontal sur in the lower part of the room, and periodically a cleaning or renewal of all of the room surface "Clean rooms" demand the extremely high standards of environmental control and cleanliness necessary for their proper function in the process of assembling, testing and repairing of precis instruments and other highly sophisticated devices requiring infinitesimal tolerances. Special attention must be given to the selection of highly motivated and above average personnel for this job. Exacting standards, written work procedures and very selective equipment and materials be used. Such operations are essential to our space and missile program and require the highe caliber supervision. (A United States Air Force Technical Manual, T.O. 00-25-203, deals with clean room standards.)

114 Preliminary Report on Microbiological Studies in a Laminar Down-Flow Clean Room. Research Report SC-RR-65-47. V.E. Arnold, et al. AVAILABLE FROM: Sandia Corporation, Albuquer New Mexico. 27 pp. (Jan. 1965). PRICE: Not Given.

Based on a preliminary investigation (and an independent confirmation study), it appears that the potential of the Sandia laminar down-flow clean room to control airborne microbiological contam nation (bacteria and fungi) is approaching the absolute. Because of the significance of this infor- mation, it is reported before further tests are performed. In the original series of tests perfor in the Sandia clean room, no bacteria or fungi spores were introduced as test organism. Only those organisms were used which were naturally present in the atmosphere and those which were inadvertently introduced by personnel performing the tests. In the confirmation study, tracer bacteria were introduced in one series as additional proof. Based on the results of the experi- ments reported here, it can be stated conclusively that the Sandia laminar down-flow clean roor using filtration and airflow control alone—can control airborne bacteria and fungi as successfull as it can airborne dust and droplets.

115 Cleanliness Meter and its Application to Solvent Cleaning. Reprint SC-R-66-865. (March, 1966) R.C. Marsh and F.W. Oswalt. AVAILABLE FROM: Technical Information Division III, Sandi Corporation, Albuquerque, New Mexico. 27 pp. (1966). PRICE: Not Given.

This paper describes the development and application of a new instrument which will measure the soluble residue content of volatile cleaning solvents. The instrument, called the Solvent Purity

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