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To: All Industrial Relations Managers

Requests for Atmospheric Hygiene Records & Reports by Labor Groups

Our Manville Plant Industrial Relations Manager has recently received a request from the Labor Union to furnish specific dust count reports and records. We anticipate that you may also receive a similar request from your local labor group.

Atmospheric hygiene count results, whether dust, fumes, vapors, etc., are meaningless in themselves without considering numerous other factors in order to analyze potential environmental health problems. They are also meaningless to a layman lacking professional knowledge and experience necessary to compile, correlate, and evaluate the total information.

Furnishing favorable or unfavorable dust, fume, vapor, etc., count records or results would serve no constructive purpose, could be readily misinterpreted, and adversely utilized. If such information were provided and used in this manner, it could defeat the entire purpose of our health program. It would also open the door for labor groups to demand all types of company reports and records, regardless of their confidential nature.

If you are confronted with a similar request from your local labor group, we recommend that you thoroughly familiarize yourself with all aspects of the subject, and keep your discussion of employee environmental and health problems in broad, generalized terms. References to employee environment and health should be discussed collectively in over-all terms of groups, departments. or plant, rather than in specifics. Elaborate on J-M general policies, practices, and programs for accident and disease prevention on the job as well as off the job. Emphasize the fact that we are complying with state statutes and requirements. We have adapted the American Conference of Governmental Industrial Hygienists' "Threshold Limit Values" as our J-M standard in conjunction with most governmental agencies and other industries. In addition, we are continuing to cooperate with employer and research organizations and the Federal Government in connection with atmospheric hygiene and industrial health research.

If it becomes essential to discuss an individual employee's health problem or the atmospheric condition of a particular location with a labor group, again - keep your discussion as general as possible and do not relate specific atmospheric hygiene, medical, Workmen's Compensation, or other record information, either verbally or in writing.

The attached description of general industrial health and atmospheric hygiene information is for your reference. It will assist you to understand the purpose and limitations of atmospheric sampling as related to over-all health evaluation.

If you receive a request for atmospheric hygiene record information from a labor group, committee, or individual, please advise GHQ Industrial Relations immediately.

CLS.

C. L. Sheckler

ccs: C. W. Hite
H. M. Ball

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J-M Industrial Health Program

Atmospheric Sampling

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A. Definition

One of the many definitions of industrial hygiene is, "The science and art of recognizing, evaluating, and controlling occupational health hazards". Industrial hygiene is an applied science for the purpose of preserving and improving the health of workers. Primarily, it involves a program of health conservation, accident and occupational disease prevention. Such a program, however, extends beyond the prevention of accidents and occupational diseases; it also includes the broad subject of over-all health of the worker. Problems, therefore, do not restrict themselves to industrial environment itself - namely, the control of dust, fumes, mists and vapors - but also include other factors such as fatigue, communicable diseases in the factory, mental health, and personal hygiene. An industrial hygiene program, therefore, necessitates the cooperation of a number of professional personnel, including the industrial hygienists and technicians physicians, engineers, chemists, statisticians, and many others.

B. Purpose for Atmospheric Sampling

Measuring or sampling the atmosphere is a procedure by which a known amount of air is drawn through a collecting agent capable of entrapping contaminants. The amount of air, duration of time per sample, and nature of collecting agent depends on the material to be sampled as well as the laboratory analysis procedure for defining and measuring the contaminants. There are several reasons for conducting environmental surveys and studies:

1. To determine levels of exposure to various atmospheric contaminants among workmen;

2. To evaluate specific problem areas and provide information in conjunction with proposed engineering, job methods, etc;

3. To determine the effectiveness of engineering control measures such as exhaust ventilation, subsequent to installation;

4. To investigate health problems on an industry-wide basis and correlate information for research and educational purposes.

C. Toxic Materials Can Be Handled Safely

Toxic materials are those which, if not controlled, may be injurious to the health of the worker through inhalation - breathing, ingestion - eating or swallowing, and absorption - direct entry through the skin. Some materials may be harmful through only one means of entry, and others may be harmful regardless of the route of entry.

A basic concept as we discuss toxic materials and their relationship to industrial health is that any material, regardless of its degree of toxicity, can be handled safely. Excellent examples of this fact may be found in the safety and health records of the atomic energy projects, as well as numerous other industries engaged in the use of toxic materials.

D. Ordinary Materials Have Toxic Potential

In everyday life, we come across materials which, if taken over considerable periods of time and in excessive dosages, could result in harm to our health. Table salt, aspirin, and even water would fall into this category.

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D. Ordinary Materials Have Toxic Potential (Cont'd)

Excessive aspirin can result in systemic poisoning due to overdose. Also, excessive salt or water can result in an inbalance of body chemistry. Properly controlled, however, salt, aspirin, and water are extremely beneficial.

Similarly, proper control of toxic materials used in industry can render these materials completely harmless. Control can be achieved through atmospheric studies, engineering, job methods, and training.

E. J-M Material Review Procedure

A factor which adds difficulties to the problem of health hazard control is that a great many solvents, thinners, and chemicals are sold and purchased under trade names. Most trade names do not reveal the constituents of a product. Until we know what materials we are handling, there is no way of identifying whether or not a potential hazard exists. Analysis information can ordinarily be obtained from the supplier, manufacturer, or professional associations.

In order to eliminate the possibility of toxic materials being used in production without our knowledge, our Research and Product Proposal procedures require evaluation of health hazard potentialsof materials and products. This evaluation is made before the materials are introduced into the production and sales channels.

F. Health Hazard Evaluation

An important consideration as we discuss industrial health is that the hazard potential or extent of hazard cannot be visualized for toxic materials in the same manner as it can in the traumatic accident hazard. The pinch-point or unguarded saw can be readily seen; but the toxic vapor, gas, harmful dust particle, or stray radiation cannot be seen. In fact, most of the toxic vapors, mists, fumes, dusts, etc., cannot be detected by the human senses of vision, touch or smell. The detection and measurement of these conditions, therefore, require special industrial hygiene instruments, as well as qualified and experienced technicians.

The mere fact that we are using a material with toxic potential, such as asbestos or diatomaceous earth, does not in itself mean that we have an uncontrolled health hazard. The only way that we can know and be in a position to state that a health hazard does or does not exist is to measure the working environment by the industrial hygiene techniques designed for that specific purpose. The results of the environment measurement must then be correlated with other information such as nature of materials sampled, duration of potential exposure, and medical and environmental history of employees in potential exposure area.

G. Hygienically Important Dust Size

When we refer to dusts as a health hazard, we are speaking of dust particles less than 10 microns in size. The dusts that penetrate into the recesses of the lung are those less than 10 microns in size. In fact, recent research has indicated that the greatest portion of the particles retained by the lung are in the 1 to 3 micron range. 1 micron equals 1/25,000 of an inch; therefore, you can appreciate how small a 1 to 3 micron particle would be.

The reason that particles larger than 10 microns are not significant as a health problem is that the body contains a wonderfully efficient filter system. Particles larger than 10 microns are trapped along the breathing system - the nose, throat, bronchial tree - and are expelled by expectoration or the other body waste disposal systems. The reference to the dust particle size of 1 to 3 microns capable of being retained in the lung is

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G. Hygienically Important Dust Size (Cont'd)

important because it becomes obvious that the dust particle which represents the health hazard cannot be seen by the naked eye. Sometimes this size particle can be detected across a beam of sunlight, but the human eye cannot resolve a particle of that dimension. Even under a 100 magnification microscope, it is difficult for an untrained person to detect a 1-micron particle.

A visually dusty operation in the plant may or may not contain an excessive quantity of hygienically important particles. A layman's description of a visually dusty atmosphere has little or no scientific significance. The only method of evaluating the health hazard is by means of a dust count analysis of an air sample. On the other hand, a layman's description of a rather clean working area may, from a hygienic standpoint, represent an unsatisfactory level of dust concentration.

H. A.C.G.I.H. Threshold Limits

Through animal experimentation and clinical research, standards have been developed over the years to guide us in evaluation of work environments. The chief agency for this function is the American Conference of Governmental Industrial Hygienists. The standards are developed by the A.C.G.I.H. in conjunction with the American Medical Association, Industrial Hygiene Foundation, American Standards Association, and many other organizations.

The Threshold Limit list is reviewed annually and published by the A.C.G.I.H. This document is regarded as the official standard by most state health and engineering departments, as well as by industry. We have adopted this as our J-M standard since the beginning of our Industrial Health Program.

Threshold Limit Values are not precise yardsticks of measurement, but should be considered as stated in the Archives of Environmental Health published by the American Medical Association, excerpts of which have been included in many state statutes:

> "Threshold limits should be used as guides in the control of health hazards and should not be regarded as fine lines between safe and dangerous concentrations. They represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day, without adverse effect. The values listed refer to time-weighted average concentrations for a normal workday. The amount by which these figures may be exceeded for short periods without injury to health depends upon a number of factors, such as the nature of the contaminant, whether very high concentrations even for short periods produce acute poisoning, whether the effects are cumulative, the frequency with which high concentrations occur, and the duration of such periods. All must be taken into consideration in arriving at a decision as to whether a hazardous situation exists. Special consideration should be given to the application of these values in the evaluation of the health hazards which may be associated with exposure to combinations of two or more substances.
>
> "Threshold limits are based on the best available information from industrial experience, from experimental studies, and, when possible, from a combination of the two. These values are based on various criteria of toxic effects or on pronounced discomfort; thus, they should not be used as common denominators of toxicity, nor should they be considered as sole criteria in proving or disproving diagnosis of suspected occupational disease.

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H. A.C.G.I.H. Threshold Limits (Cont'd)

"These limits are intended for use in the field of industrial hygiene and should be employed by persons trained in this field. They are not intended for use, or for modification for use, in the evaluation or control of community air pollution or air-pollution nuisances.

"These values are reviewed annually by the Committee on Threshold Limits for changes, revisions, or additions as further information becomes available."

I. Summary

The conduct of environmental surveys and studies is but one phase of the over-all picture in evaluating occupational health hazards. Survey information is valuable only if all environmental factors relating to workers from childhood to date, along with complete medical background and history, are analyzed and evaluated. Our J-M Industrial Hygiene team is constantly working throughout our plants gathering valuable sample information which has in the past and will in the future enable us to identify problem areas, analyze the nature of the problems, and assist management and engineering to eliminate potential exposure hazards.

CLS.

C. L. Sheckler

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