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Its pages are devoted to discussions of plant design, management, operation, production, efficiency, chemical research and control, quarry operation, progress and news of the industry.

The Cement Mill Edition also contains all the material published in the corresponding Regular Edition and so provides news of the uses and merchandising of the materials whose manufacture is discussed in the Mill Edition.

The Regular Section furnishes mill operating officials and mill executives valuable points of contact with the users of the materials they produce.

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Acceptance and Use of Respiratory Protection by Workmen

WORKMEN readily accept devices for personal respiratory protection when encountering atmospheres that are markedly discomforting or intolerable to breathe, or for situations that have either been observed by them to cause immediate harm or which they definitely understand may cause immediate harm.

There are, unfortunately, some persons remaining who for one reason or another do not believe in the use of these protective devices. To a considerable extent they are persons who do not have a good acquaintance and understanding of this equipment, especially those whose occupational experience antedates the present safety movement. Others accept exposure to harmful atmospheres as part of their occupation, and frequently are proud of their ability to "take it" or "eat it," as they say. Some persons are plainly obstinate and contrary. Undoubtedly some are fearful or have other complexes resulting from lack of experience and knowledge of the protection afforded. During the time this discussion was being written, several firemen collapsed and were sent to a hospital in a serious condition from breathing gases while fighting a fire that occurred within sound and sight of the writer—all because they did not wear respiratory protection. Whether or not this was due to lack of equipment, aversion to wearing it, or to some of the complexes mentioned is not known.

Difficult in Tolerable Atmosphere

As may be expected, somewhat more difficulty would be experienced in securing the proper use of personal respiratory protection for situations in which the harmful atmosphere is tolerable or at least only mildly discomforting. This is especially true where exposure is to a substance, as silica dust, that possesses no sense-perceptive properties other than perhaps a visible dustiness, if conditions are extremely bad, and produces no dis-

tinct self-observable immediate or accumulative effects on health until serious damage has been done.

The experience in the use of personal respiratory protection for the situations that may produce silicosis has been diverse, and in some instances conflicting. In one extreme there are many verified reports of requests for respirators by workmen, even demands in some instances, because these workmen understood the hazards of their occupation and desired to protect their health. In other situations workmen have requested respirators for protection from nuisance dusts primarily as a means of avoiding discomfort. The usual experience is for the employer to adopt respiratory protection as a means of preventing occupational disease and for the workmen to accept it. In general, there has been no difficulty in adopting this means of protection where there is a need and the proper equipment has been procured, and supervision given to its use.

Supervision of Use

Personal respiratory protective devices must be maintained in a condition, especially from the standpoint of giving protection, that is substantially the same as when received from the manufacturer. Replacement and repair parts that are identical with those originally supplied by the manufacturer should be used, unless he advises that other parts are suitable and also permissible under the provisions of any approval that the device may have.

Proper maintenance requires a thorough knowledge of the device and should be performed by a responsible person. Where a considerable number of respirators are used, it is good practice to have a "respirator room" with an attendant. The respirators are issued out to the workman in the morning and returned at the end of each day. They are then cleaned, sterilized, any necessary replacements or repairs made, and put in a good condition for reissuance the next day. This plan is already in use and has been found to be very satisfactory.

Too frequently the respirator is given direct to the workman, after which he is responsible for the wearing, maintenance, and care until it is worn out. This procedure may be the most convenient if only a few men and respirators, say five or less, are involved, but it is not satisfactory unless a good degree of supervision is exercised.

Each person should have his own respirator for a working day unless they are cleaned and sterilized between each interchange between men. The interchange of respirators without cleaning and sterilizing is far worse practice than the "common drinking cup." Respirators and all parts should be marked with individual identifying numbers.

Storage of Respirators

The storage of respirators should be in a clean place, free from industrial dusts. It is an old observation that the dust on the inside of the facepiece of a respirator stored in a dirty place may exceed that acquired by direct breathing from the air. A respirator is an article of personal hygiene and should always be considered as such.

The use of respirators should always be supervised to insure that each is worn properly and all parts are functioning as intended. They should be inspected when not in use, to insure their proper maintenance.

It would be very good practice for all supervisors of workmen who use personal protective equipment to occasionally wear the protectors under the conditions of performance of the workmen's duties, so that they may have first-hand experience for planning and supervising their use.

There have been observations and reports of situations where the workmen have been indifferent and even opposed to the use of respirators. If compelled to wear them by administrative order, they do so properly only when under very strict supervision. When the supervisor's back is turned, the workmen render the devices ineffective by ruses and tricks,

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From Report on Engineering Control, presented to the National Silicosis Conference by Committee on Prevention of Silicosis through Engineering Control, headed by Warren A. Bok, Connecticut State Department of Health, Hartford, Conn.

such as improper assembly, destruction of filters, and adjustment to make a loose fit around the facepiece. As these poor experiences sometimes occur in the performance of industrial operations of the same kind that they have been conducted in other plants that have good experience with respirators, it is indicated that in these situations the difference is due to either the management, the employees, the condition of work, or the type or quality of equipment provided. It is usually lack of supervision and failure of the employer to convince the employee that protection is needed. It is rather significant that persons that procure and pay for respirators for their own personal protection seldom find difficulty in using them. These persons are convinced that they need protection.

Cleaning and Sterilizing

Respirators, especially the facepieces, should be cleaned at the end of each day in which they are used and sterilized at least once (preferably twice) each week if the same respirator is issued to the same person each day, and always before they are given to another person to wear.

In cleaning a respirator all metal and rubber parts (especially any parts that come in contact with the skin) should be scrubbed both inside and out with soap and luke-warm water. This procedure is always required for removing dust, dirt, and perspiration, regardless of the use of other sterilizing agents.

To a large extent, the procedure to be used for sterilizing a respirator depends on the materials of construction and their possible damage or destruction. Recommendations for the proper procedure for a particular device should be obtained from the manufacturer. The following have been used:

1. Immerse the respirator (excepting filter units) in a 1 per cent solution of cresol. The respirator should be rinsed and allowed to dry.
2. Immerse the respirator (excepting filter units) in alcohol in a strength of 75 per cent or higher.
3. Subject to a moist atmosphere of antiseptic gas, such as formaldehyde, for a period of 10 minutes.
4. Immerse for a period of 10 minutes in a solution of formalin made by dissolving one part of 40 per cent formaldehyde in 9 parts of water, and rinse.
5. Immerse in boiling water for a period of 5 minutes, or subject to live steam for a period of 5 minutes. This

procedure has distinct deteriorating effects on rubber parts.

Responsibility of Employer and Employee

The responsibilities of employers and employees in the proper use of personal respiratory protection are of the same general nature as those for all safety and hygiene in industry. The employer should understand the occupations performed by the workmen and the hazards involved. He should be acquainted with the design, uses, and limitations of protective equipment. Where protection is needed, equipment of the proper type and of good quality should be provided. Employers should carefully consider the workman's duties and make reasonable requests and regulations for the use of the equipment. The workman should be made familiar by personal instruction with the need for wearing the equipment, and his interest in protecting his health should be obtained. He should be thor-

oughly instructed in the proper use of the equipment in the performance of his work, its care, and any dangers in its use. The equipment should be maintained by the employer with the aid of the employee in a good, clean, serviceable condition, and its use carefully supervised. If the employer faithfully and properly responds to these responsibilities, the workman should accept the responsibility for wearing the device in the most effective manner that he knows and thereby co-operate in protecting his health. Satisfactory use of personal respiratory protection can not be obtained without this mutual acceptance of responsibility and co-operation.

Unfortunately, there are instances in which either the employer or employee fails to respond to his responsibilities, and both may lose; the employer loses the service of the employee and the cost of compensation, and the employee loses his health and at least part of his earning power.

Property Owners Fight Plans to Build Cement Plant in California

LOCATION of the proposed new cement plant, planned for construction near Los Altos, in Santa Clara County, California, as a means of supplying 5,800,000 bbl. of cement for the huge Shasta Dam to be built for the U. S. Reclamation Bureau, remains in doubt.

Plans for the construction of a \$4,000,000 cement plant were announced by The Permanente Company, as mentioned in an article on page 186 of the June issue of the *Cement Mill Edition* of CONCRETE. This company is composed of a group of Pacific Coast companies that formed The Permanente Company as a means of combining their resources in order to handle the huge contract. The award was made by the procurement division of the U. S. Treasury Department, acting as the Government purchasing agency in behalf of the U. S. Reclamation Bureau. The Permanente Company's bid was \$1.90 plus, per bbl., or a total of \$11,025,892. Another combination of companies bid \$2.10 per bbl., or a total of \$12,591,747.

Doubt regarding the location of the proposed new plant arises from two sources. First, the scheme is bitterly opposed by a large number of property owners in Los Altos and Santa Clara

County, who assert that the adverse effect on property values and the damage to fruit crops would far outweigh any advantages derived from the payrolls to be disbursed by the cement plant. Real estate people declared that several large subdivision developments that were planned are being held up, pending a final decision in the matter, and will fall through completely if the cement plant is built in the announced location on Permanente Creek.

In contrast to the antagonistic attitude of many of the residents of Los Altos and Santa Clara County, the Chamber of Commerce of Redding, is making a concerted effort to get the cement plant located near that city, in the grey rocks district near Baird, California.

Meanwhile, the Santa Clara County Board of Supervisors, which had previously granted a permit for construction of the cement plant, has reconsidered its action and is holding a series of largely-attended public hearings at irregular intervals, in the effort to arrive at a final decision.

The Permanente Company is headed by Henry J. Kaiser, of Oakland, California.

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