Editorial

Toxic Pollutants, Science, and Corporate Influence

As of September, 1988, no less than 37 states had developed ambient air standards for toxic pollutants based on the Threshold Limit Values (TLVs) issued by the American Conference of Governmental Industrial Hygienists (ACGIH). The TLVs are time-weighted-average concentrations for an 8-h work day and a 40-h work week to which "nearly all workers may be repeatedly exposed, day after day, without adverse effect," according to ACGIH.[1]

State air pollution authorities have disregarded the ACGIH's admonition that the TLVs not be used to evaluate community air pollution. The reasoning expressed by Maryland officials is that TLVs are the "best information available" for use in developing "screening levels" for a large list of substances. Maryland sets these levels at 1/100th the TLVs.[2] The use of this multiplier is arbitrary, and any safety margin attributed to it hinges on the corresponding safety of the TLVs.

A review of the historical development of the TLVs has revealed serious shortcomings in the process followed by ACGIH.[3] Unpublished corporate communications were important in developing TLVs for 104 substances; for 15 of them, the TLV documentation was based solely on such information.[3,4] Copies of the unpublished corporate communications in writing were unobtainable in most cases from the ACGIH, the companies, and files of participating government officials.

Worst of all, corporate representatives listed officially as "consultants" since 1970 were given primary responsibility for developing TLVs on scores of chemicals, including proprietary chemicals of the companies that employed them (Dow, DuPont, and Bayer, primarily). Corporate representatives were assigned the responsibility for developing the documentation of TLVs for more than 100 substances, including 36 classified as carcinogens by official bodies. Dow's toxicologist obtained the task of documenting TLVs for at least 30 of Dow's halogenated hydrocarbons, pesticides, and other industrial chemical products.[3,5]

Starting with the publication of our report on the TLVs, the *American Journal of Industrial Medicine* carried an editorial and 23 related commentaries by the end of 1988. The majority of writers concurred that the TLVs left much to be desired from a scientific point of view. Former director of the National Institute for Occupational Safety and Health (NIOSH), John Finklea, wrote that the TLVs were the "result of a process that would currently be viewed as seriously flawed."[6] Nonetheless, in the closing months of the Reagan administration, OSHA moved to adopt hundreds of the 1987 TLVs as permissible exposure limits, eliciting strong criticism from unions and general approval from the chemical industry.[7,8]

New Jersey Health Officials, using EPA's new Integrated Risk Information System (IRIS), have examined some of the 1987 TLVs from the perspective of risk that might be considered for environmental exposure.[9] IRIS data for 49 substances, including suspected and known carcinogens, were used to calculate workday air concentrations (WACs) corresponding to no risk of chronic health effects or (for carcinogens) a one-in-a-million lifetime risk of cancer. For these chemicals, the median TLV was 1 900 times higher than the WAC. For 15 of the 24 carcinogens evaluated, the (risk) ratio between the TLVs and the WACs was upwards of 100 000. And these are TLV chemicals about which relatively more is known, compared to most of the others!

In view of this, policymakers who feel they must rely on the TLVs should seriously consider changing the "rules of thumb" or so-called "safety" factors they use to select ambient air standards. Where a multiplier of 1/100 of the TLV has been used, 1/1 000, 1/10 000 or less could be used with comparable scientific justification. To the extent that occupational exposure limits are to be used in setting environmental ones, one should consider that better-supported and more restrictive standards have been advanced by NIOSH (and OSHA) for many chemicals.[10]

There is also talk of using the TLVs in setting standards for indoor air pollution and even limits for contaminants in ground water. The TLVs have been cited in liability proceedings to "disprove" health hazards from drinking water contaminants. To round out the picture, disputes over regulation of consumer products also sometimes include assertions that the TLVs are accepted as safe concentrations for human exposure.

Thus, the TLVs, issued solely as guidelines for occupational exposure, have come to be used as reference levels in setting the limits of environmental exposure for hundreds of chemicals. In some cases, we now know, the manufacturers of these products have had a major unacknowledged influence in the process of choosing the TLVs—and consequently, in prescribing the acceptable limits of public exposure to their products, which used to be known as industrial poisons.[11]

The contortion of using the TLVs to set environmental standards reflects the dearth of sound data on chronic health effects. Given the long history of use and widespread public exposure to many chemicals, the general lack of chronic indus-

(continued on page 127)

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Editorial (continued from page 68)

trial and experimental data is appalling.[12] The major manufacturers and users of these substances owe a much fuller accounting than they have been inquisitive and forthcoming enough to provide in the past. In the meantime, greater caution is needed in setting environmental standards for chemicals to protect the public's health.

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