Office of Hazardous Materials

[49 CFR Parts 170–189]

[Docket No. HM–51]

CLASSIFICATION OF CERTAIN HAZARDOUS MATERIALS ON BASIS OF THEIR HEALTH HAZARDS

Second Advanced Notice of Proposed Rule Making

On June 6, 1970, the Hazardous Materials Regulations Board published an Advance Notice of Proposed Rule Making Docket No. HM–51 (35 F.R. 8831), inviting public assistance in developing regulatory principles for the classification of certain hazardous materials on the basis of their health hazards.

The comments received generally related to toxicity test procedures, classification, and degrees of toxicity.

Toxicity test procedures. Most commenters agreed that toxicity test procedures should be uniform among regulatory agencies, noting even minor variations by DOT could be confusing. Apprehension was displayed concerning the use of tests and other criteria which were not developed specifically for the transportation environment.

Classification. Many commenters contended that materials having only minor temporary and reversible irritating effects should not be regulated. The potential safety hazard of these materials during transportation, they claimed, is not considered so severe as to justify regulation. Others suggested that materials causing irreversible destruction of living tissue should be covered under a corrosive classification, such as discussed in Docket No. HM–57. Some commenters suggested that the Poison C category be retained for lachrymatory and respiratory irritation.

Degrees of toxicity. There was no common opinion expressed in this area. One group of commenters suggested retaining only one toxic category as Poison B, leaving the Poison A category for gases only, and possibly placing some quantitative benchmarks on this category. Others agreed in principle with the designation of various degrees but suggested modifications.

A second advance notice is being used to give the public ample opportunity to contribute to the development of the matter before the Board, prior to publication of a notice of proposed rule making. On the basis of comments received on this advance notice, the Board is of the opinion it will be able to prepare a more complete and meaningful notice.

The present definitions of poisonous materials only contain specific testing criteria or guidelines for Class B poisons. There are no criteria or sufficiently descriptive guidelines for Class A or Class C poisons. Consequently, the public may encounter difficulty in relying solely on those definitions to determine the applicability of the regulations. In order to improve this situation, the Board proposes to adopt testing criteria wherever possible and better descriptive guidelines for all toxic materials covered by the Department's regulations.

The National Research Council-National Academy of Sciences assisted the Department in developing these test criteria. In addition, the testing procedures and hazard degrees used by the Departments of Agriculture and Health, Education, and Welfare were considered to insure harmony among the regulatory standards of Federal agencies having jurisdiction with respect to health hazards of chemicals.

The health hazards of materials being transported are proposed to be characterized by their acute effects on human health. The hazards considered are systemic hazards and irritant hazards. Systemic or internal hazards exist when materials, if inhaled, ingested, or absorbed through the skin can have harmful effects on organs and tissues other than at the site of contact. Irritant hazards exist when materials such as gases, vapors, or mist can have local irritating effects on eyes, nose, or throat temporarily impairing the person's ability to function to the degree that he cannot take necessary emergency action.

Materials which otherwise produce reversible injury to the tissues of the skin are not proposed to be regulated. Materials which cause destruction of these tissues by chemical action would be considered under the "Corrosive" classification discussed in Docket No. HM–57, Classification of Corrosive Hazards; advance notice of proposed rule making, published September 4, 1970 (35 F.R. 14090).

Degrees of hazard would be ranked according to the potential severity of the hazard to people. The establishment of hazard degrees is necessary in order to establish packaging criteria reflecting the potential severity of the damage if a product should escape from its packaging during transportation. The major categories and criteria which would be proposed are as follows:

Extremely toxic substances. Materials would be classified as extremely toxic substances if, on short exposure, they

could cause death or major residual injury to humans. In the absence of adequate data on human toxicity, a material would be presumed to be extremely toxic to humans if it fell within any one of the following categories when tested on laboratory animals, according to the U.S. Department of Agriculture test procedures described under Title 7, Chapter 3, § 362.8 of the Federal Regulations.

(1) Ingestion (oral): Any material that has a single dose LD_{50}[1] of 5 milligrams or less per kilogram of body weight when administered orally to both male and female rats (young adults).

(2) Inhalation: Any material that has an LC_{50}[1] of 50 parts per million or less by volume of a gas or vapor, or 0.50 milligrams or less of mist or dust per liter of air when administered by continuous inhalation for 1 hour to both male and female white rats (young adults). If the material is administered to the animals as a dust or mist, more than 90 percent of the particles available for inhalation in the test must have a diameter of 10 microns or less, provided the Department finds it reasonably foreseeable that such concentrations could be encountered by man.

(3) Skin absorption: Any material that has an LD_{50} of 20 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours with the bare skin of rabbits, according to test procedures described in Title 21, § 191.10 of the Code of Federal Regulations.

Highly toxic materials. Materials would be classified as highly toxic if, on short exposure, they could cause serious temporary or residual injury to humans. In the absence of adequate data on human toxicity, a material would be presumed to be highly toxic to humans if it fell within any one of the following categories when tested on laboratory animals, according to the U.S. Department of Agriculture test procedures described under Title 7, Chapter 3, § 362.8 of the Code of Federal Regulations.

(1) Ingestion (oral): Any material that has a single dose LD_{50} of more than 5 milligrams but not more than 50 milligrams per kilogram of body weight when orally administered to both male and female white rats (young adults).

(2) Inhalation: Any material that has an LC_{50} of more than 50 parts per million by volume of gas or vapor but not more than 200 parts per million or more than 0.50 milligram, but not more than 2 milligrams of mist or dust per liter of air when administered by continuous inhalation for 1 hour or less to both male and female white rats (young adults). If the product is administered to the animals as a dust or mist, more than 90 percent of the particles available for inhalation in the test must have a diameter of 10 microns or less provided the Department finds that it is reasonably foreseeable that such concentrations could be encountered by man.

(3) Skin absorption: Any material that has an LD_{50} of greater than 20 milligrams but not more than 200 milligrams per kilogram of body weight when administered by continuous contact for 24 hours with the bare skin of rabbits, according to the test procedures described in Title 21, § 191.10 of the Code of Federal Regulations.

Tear gas or irritating substances. Materials would be classified as tear gas or irritating substances if they cause reversible local irritant effects on eyes, nose, or throat temporarily impairing a person's ability to function to the degree that he cannot take necessary emergency action. Military and police tear gases and riot control agents would fall under this category. It is planned to include a list of materials falling under this category in the notice of proposed rule making.

If human experience or other data indicate that the hazard of a given material encountered during an accidental exposure in transportation is greater or less than indicated by the data from the specified animal tests, the classification for the specific material could be revised to reflect this data.

If these classifications are adopted, appropriate changes will be required in the labels required to be applied to packages.

Interested persons are invited to give their views on this notice. Communications should identify the docket number and be submitted in duplicate to the Secretary, Hazardous Materials Regulations Board, Department of Transportation, 400 Sixth Street SW., Washington, DC 20590. Communications received on or before April 27, 1971, will be considered before final action is taken on this subject. All comments received will be available for examination by interested persons at the Office of the Secretary, Hazardous Materials Regulations Board, both before and after the closing date for comments.

Issued in Washington, D.C., on February 5, 1971.

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Office of Hazardous Materials.

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[1] LD_{50}, LC_{50}: That dose (LD) or concentration (LC) which will cause death within 14 days to one half of the test animals.