



U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Ave., S.E.
Washington, DC 20590

JUL 2 2008

Mr. Thomas R. Carey
Bell, Boyd & Lloyd, LLP
70 W. Madison St.
Suite 3100
Chicago, IL 60602

Ref. No. 08-0050

Dear Mr. Carey:

This is in response to your August 29, 2007 request for clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the hazard class and transportation by highway and rail of forbidden materials that are stabilized or diluted. I apologize for our delay in responding and any inconvenience this may have caused.

In your letter, you state that the company you represent, CDG Research Corporation, has manufactured a proprietary 0.3% (i.e., 3,000 parts-per-million) chlorine dioxide aqueous solution named "CDG Solution 3000." This product is manufactured from a material forbidden for transportation under the HMR, pure chlorine dioxide, but has been diluted more than 300:1 (99.7%) with water and is stabilized. In your letter, you also state that: (1) test data show that CDG Solution 3000, at full strength, exhibits corrosion on steel and aluminum surfaces exceeding 6.25 mm (0.25 inch) a year at a test temperature of 55 °C (130 °F); (2) test data show that this material does not cause full thickness destruction of intact skin tissue within an observation period of up to 14 days starting after the exposure time of more than 60 minutes but not more than 4 hours; and (3) the product is not an organic peroxide, explosive, or self-reactive material as defined by the HMR, and is not listed as a marine pollutant. You ask whether: (1) this product is subject to the prohibition of "Chlorine dioxide (not hydrate)" under the HMR; (2) there are requirements for formal DOT approval or authorization prior to surface transportation by highway or rail; and (3) if this product should be classed as a "corrosive" material (Class 8) with a Packing Group of III.

As specified in § 172.101(d)(1), if any specifically listed, pure, forbidden material is stabilized or diluted or incorporated in a device and is classed in accordance with the definitions of hazardous materials contained in Part 173 of the HMR, it is no longer considered a forbidden material. It is your responsibility to ensure the material is stabilized, classed, and transported in accordance with the HMR. Organic peroxides, explosives, and self-reactive materials require formal approval from the Associate Administrator for Hazardous Materials Safety. For other than these materials, no formal approval or authorization is required from DOT to dilute, stabilize, and transport the material. In addition, the proper shipping name "Chlorine dioxide (not hydrate)" does not apply to the diluted and stabilized material as described in

your letter. Your product appears to meet the definition of a corrosive material (Class 8), Packing Group III. Therefore, a more appropriate proper shipping description is "Corrosive liquid n.o.s., (0.3% Chlorine dioxide), 8, UN1760, PG III. If you believe the diluted condition of 3000 ppm is stabilized, an appropriate proper shipping description is "Corrosive liquid n.o.s., (0.3% Chlorine dioxide, stabilized), 8, UN1760, PG III.

I hope this information is helpful.

Sincerely,



Susan Gorsky,
Regulations Officer
Office of Hazardous Materials Standards

BELL, BOYD & LLOYD LLP

MEMORANDUM
PRIVILEGED & CONFIDENTIAL
ATTORNEY-CLIENT COMMUNICATION
ATTORNEY WORK PRODUCT

Foster
§ 172.101

§ 171.8

§ 173.21

Proper Shipping Name
08-0050

TO: Aaron Rosenblatt, *Chairman*
CDG Research Corporation ("CDG")

FROM: Thomas R. Carey

DATE: August 29, 2007

SUBJECT: Transport of *CDG Solution 3000*TM Chlorine Dioxide Aqueous Solution

I. Introduction:

CDG makes a proprietary 0.3 % (*i.e.*, 3,000 parts-per-million) chlorine dioxide aqueous solution ("*CDG Solution 3000*"; "Product"). On March 8, 2007, *CDG Solution 3000* was registered by the United States Environmental Protection Agency ("USEPA") as an anti-microbial pesticide under the provisions of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). The EPA registration number is 75757-2.

This memorandum reviews government regulations, especially those of the United States Department of Transportation ("DOT"), pertaining to the surface transport of *CDG Solution 3000* by motor vehicle or rail car. Issues pertaining to transport of the Product by air or water are not within the scope of the present review.

Specifically, we address the following issues:

1. The relationship of *CDG Solution 3000* to the prohibition on transporting "*chlorine dioxide (not hydrate)*", which is listed as a "Forbidden Material" in the DOT Hazardous Materials Regulations ("HMR");
2. Requirements, if any, for formal DOT approval or authorization for surface transport of *CDG Solution 3000* by motor vehicle or rail car;
3. The proper DOT classification(s) for *CDG Solution 3000*; and
4. Special placards and driver-licensing requirements, if any, pertaining to surface transport of *CDG Solution 3000* by motor vehicle or rail car.

II. Underlying Facts:

Our conclusions are based on our understanding of certain underlying facts, including the following:

1. CDG wishes to transport *CDG Solution 3000* by surface transportation means - *i.e.*, motor vehicle or rail car.
2. Test data show that *CDG Solution 3000*, at full strength, exhibits corrosion on steel and aluminum surfaces exceeding 6.25 mm (0.25 inch) a year at a test temperature of 55 °C (130 °F).
3. Test data show that *CDG Solution 3000* does not cause full thickness destruction of intact skin tissue within an observation period of up to 14 days starting after the exposure time of more than 60 minutes but not more than 4 hours.
4. *CDG Solution 3000* is not an organic peroxide, explosive, or self-reactive material, as defined in 49 C.F.R. §§ 173.128, 173.50, and 173.124, respectively.
5. *CDG Solution 3000* is not listed as a marine pollutant in 49 C.F.R. § 172.101, Hazardous Materials Table, Appendix B – Marine Pollutants.

III. Citations:

49 C.F.R. § 172.101(d)(1), Section 173.21(a), provides:

Unless otherwise provided in this subchapter, the offering for transportation or transportation of the following is forbidden:

- (1) Materials that are designated "Forbidden" in Column 3 of § 172.101.

Section 172.101(d)(1) of the HMR provides:

(d) *Column 3. Hazard Class or Division.* Column 3 [of the Table] contains a designation of the Hazard Class or Division corresponding to each proper shipping name, or the word "Forbidden".

- (1) A material for which the entry in this column is "Forbidden" may not be offered for transportation or transported. **This prohibition does not apply if the material is diluted, stabilized or incorporated in a device and it is classed in accordance with the definitions of hazardous materials contained in part 173 of this subchapter.**

49 C.F.R. § 171.8 – Definitions and abbreviations, provides:

Stabilized means that the hazardous material is in a condition that precludes uncontrolled reaction.

49 C.F.R. § 173.136(a), Class 8—Definitions, provides:

For the purpose of this sub-chapter, “corrosive material” (Class 8) means a liquid...that causes full thickness destruction of human skin at the site of contact within a specified period of time. A liquid that has a severe corrosion rate on steel or aluminum...is also a corrosive material.

49 C.F.R. § 173.137(c)(2), Class 8—Assignment of Packing Group, provides:

Packing Group III. Materials...that do not cause full thickness destruction of intact skin tissue but exhibit a corrosion on steel or aluminum surfaces exceeding 6.25 mm (0.25 inch) a year at a test temperature of 55 °C (130 °F).

49 C.F.R. § 173.154(d)(1-2) Exceptions for Class 8 (corrosive materials), provides:

(d) *Materials corrosive to aluminum or steel only*. Except for a hazardous substance, a hazardous waste, or a marine pollutant, a material classed as a Class 8, Packing Group III, material solely because of its corrosive effect—

(1) On aluminum is not subject to any other requirements of this subchapter when transported by motor vehicle or rail car in a packaging constructed of materials that will not react dangerously with or be degraded by the corrosive material; or

(2) On steel is not subject to any other requirements of this subchapter when transported by motor vehicle or rail car in a bulk packaging constructed of materials that will not react dangerously with or be degraded by the corrosive material.

IV. Discussion:

The material “*chlorine dioxide (not hydrate)*” - *i.e.*, pure chlorine dioxide- is classified as a “Forbidden Material” in the HMR and may not be offered for transportation or transported. However, Section 172.101(d)(1) (*see above*) expressly provides that the “prohibition [on forbidden material] does not apply if the material is diluted [or] stabilized . . . and it is classed in accordance with the definitions of hazardous materials contained in part 173.”

CDG Solution 3000, which is a 0.3% aqueous solution, is diluted more than 330:1 (99.7%) with water, in which diluted condition it is stabilized - *i.e.*, it is precluded from undergoing uncontrolled reaction.

CDG Solution 3000 falls clearly within the definitions of hazardous materials in part 173. Specifically, it is a “corrosive material” (Class 8), (*see* 49 C.F.R. § 173.136(a), above), based on steel and aluminum corrosion test data.

CDG Solution 3000 falls clearly within the definition of a “Packing Group III” material (*see* 49 C.F.R. § 173.137 (c)(2), above), based on steel and aluminum corrosion test data and skin corrosion test data.

Part 173 of the HMR contains express prior approval requirements for the transport, or offering for transportation, of organic peroxides, explosives and self-reactive materials. (*See* 49 C.F.R. §§ 173.128(d); 173.51(a); 173.124(a)(2)(iii).) The regulatory provisions covering Class 8 materials do not contain a corresponding approval requirement.

CDG Solution 3000 is a “corrosive material” (Class 8), solely because it is corrosive to steel and aluminum. It therefore meets the requirements of 49 C.F.R. § 173.154(d)(1-2), Exceptions for Class 8 (corrosive materials).

IV. Supplementary Information:

A letter from Delmer F. Billings, Office of Hazardous Materials Standards, to Lauren Malone, Onyx Environmental Services LLC, Ref. No. 99-0255 (Apr. 12, 2000)(Ref. 99-0255), clarified the hazard class and transportation of forbidden materials that have been stabilized or diluted. Ref. 99-0255 states as follows:

if any specifically listed, pure forbidden material is stabilized or diluted to reduce or eliminate the hazards, it is then no longer considered a forbidden material. It is your responsibility to ensure it is stabilized, classed and transported in accordance with the HMR. Organic peroxides, explosives, and self reactive materials always require formal approval from the Associate Administrator for Hazardous Materials Safety. For other than these materials, no formal approval or authorization is required from DOT to dilute, stabilize, and transport the material.

V. Conclusions:

Based on our review and interpretation of the HMR and DOT regulations, as further enlightened by Ref. 99-0255, we conclude that:

1. *CDG Solution 3000* is not subject to the prohibition of “*chlorine dioxide (not hydrate)*” as a “Forbidden Material” under HMR.
2. There are no requirements for formal DOT approval or authorization prior to surface transport of *CDG Solution 3000* by motor vehicle or rail car.

3. The proper DOT classifications for *CDG Solution 3000* are:
 - a. Corrosive material (Class 8), and
 - b. Packing Group III.

4. There are no special placards or driver-licensing requirements for vehicles used for surface transport of *CDG Solution 3000*, subject to the Product being packaged and shipped in containers that will not react dangerously with or be degraded by the Product (*e.g.*, plastic).

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