



U.S. Department  
of Transportation

**Pipeline and  
Hazardous Materials Safety  
Administration**

400 Seventh Street, S.W.  
Washington, D.C. 20590

JAN 12 2006

Mr. Wade A. Winters, CET, CHMM  
President  
Regulatory Resources, Inc.  
240 Joshua Road  
Kennewick, WA 99338

Ref. No.: 03-0037

Dear Mr. Winters:

This is in response to your letter dated January 23, 2003, concerning requirements in the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) for determining the appropriate reportable quantity (RQ) for a hazardous waste. I apologize for the delay in responding to your inquiry.

In your letter, you question this office's previous interpretations on the appropriate RQ for a hazardous waste for which the constituents are known but specific percentages are unknown. You state that our previous interpretations on this topic are inconsistent with interpretations and guidance issued by the U.S. Environmental Protection Agency (EPA).

In past interpretations, we have stated that if the constituents of a hazardous waste and its concentrations are known, then the RQ for the constituent is appropriate. We have also stated that if the hazardous waste's constituents or their respective concentrations are unknown, then the appropriate RQ is that which is assigned to the hazardous waste.

You are correct that EPA interpretations and guidance state that, for a hazardous waste for which all of the constituents are known but their respective concentrations are unknown, the RQ for the constituent should be used. Therefore, we are revising our previous guidance on this issue. To determine the RQ for a hazardous waste for which the constituents are known, but their respective concentrations are unknown, you should apply the total amount of the hazardous waste in the packaging to the individual constituents to determine if an RQ has been met.

I appreciate your bringing this inconsistency to our attention. We will make every attempt to bring this change in policy to the attention of the regulated community. Please contact us if you require additional assistance.

Sincerely,

Susan Gorsky  
Acting Director  
Office of Hazardous Materials Standards

172.101



030037



Belertford  
§ 172.101  
Hazardous Substance  
03-0237

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January 23, 2003

Mr. Edward Mazullo,  
Director  
Office of Hazardous Materials Standards (DHM-10)  
Research and Special Programs Administration  
U.S. Department of Transportation  
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Washington, DC 20590-0001

Dear Mr. Mazullo,

Regulatory Resources, Inc. (RRI) is a consulting and training company serving clients subject to the Department of Transportation (DOT) Hazardous Materials Regulations (HMRs) and the Environmental Protection Agency (EPA) solid and hazardous waste management regulation. Naturally, other federal regulations are referenced by these, one being the requirements for reporting hazardous substances as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

We at RRI believe it is imperative that both the CERCLA and DOT's Research and Special Programs Administration (RSPA) apply the hazardous substance reportable quantity determinations in the same manner. For RSPA to impose differing RQ determinations places a tremendous and unnecessary burden on consignors and carriers. Based on the letters from RSPA referenced in this request for clarification, a consignor and carrier must designate a hazardous substance according to RSPA application and then provide a completely new determination for actual CERCLA reporting. I find this to be in conflict with the statement made in 49 CFR 172.101, Appendix A, paragraph 1, second sentence:

"This listing fulfills the requirements of CERCLA, 42 U.S.C 9656(a), that all "hazardous substances" *as defined in 42 U.S.C. 9601(14)*, be listed and regulated as hazardous materials under 49 U.S.C. 5101-5127." (emphasis added)

Before we can present our concerns, RRI believes it is important to provide a brief background of hazardous substances and the establishment of the reportable quantity (RQ) values. For the purpose of the background information, the term "chemical" includes compounds of chemicals, and the implying release or potential release of a hazardous substance assumes release within a 24 hour period.

#### Background

To provide an effective and comprehensive response to the problems caused by releases of hazardous substances, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (amended in 1986). In this Act, Congress defined a hazardous substance (section 101(14)) to include "...any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act..." To ensure that the EPA acted in a timely manner incorporating the requirements of the Act, Congress established a "hammer" date that set statutory RQ values for hazardous substance for which RQ values were not yet established. The EPA has since developed and revised the modeling program that evaluates a given chemical and determines its RQ value based on various criteria.

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Therefore, chemicals specifically listed on the CERCLA Hazardous Substance list in 40 CFR 302.4 have an RQ value established either through specific modeling results or statutory requirement (I believe many are now based on modeling results).

#### Establishing an RQ Value

The RQ for a given chemical is determined based upon the intrinsic properties of the chemical. These include aquatic toxicity, mammalian toxicity (oral, dermal and inhalation), ignitability, reactivity, chronic toxicity (including neurotoxic effect), and potential carcinogenicity. Intrinsic properties are termed "primary criteria."

Generally, for each primary criteria, EPA ranks the chemical on a scale. The data for the chemical are evaluated leading to different values for each specific criteria. The lowest of the tentative RQs becomes the primary criteria RQ for that chemical. Two factors play into this rating value, one being the dose that causes a particular effect and the other based on the severity of the effect. The product of the dose and effect rating (both using a 1-10 rating scale where 10 is the most toxic) yields a composite score between 1-100.

The EPA also considers bioavailability when determining RQ values. Bioavailability represents the rate and extent to which a chemical is absorbed or otherwise assimilated into the body tissue following exposure by various routes, such as ingestion. (Solubility, as used in context to bioavailability is different inasmuch as solubility refers to the degree to which a material dissolves in the gastric fluid of the stomach.)

After primary criteria are assigned, EPA further evaluates the chemical on its susceptibility to certain degradative processes, i.e., secondary criteria. If the chemical, when released into the environment, degrades at a relatively rapid rate to a less hazardous form, its primary RQ value may be raised one RQ level (e.g., from 4.54 kg to 45.4 kg). However, if the chemical degrades to a more hazardous product after its release, an adjusted RQ may be assigned lower than that obtained for the primary RQ.

In summary, the value assigned a given hazardous substance is not a random selection but rather is a value based on research and modeling results.

#### Identity of Listed and Unlisted Hazardous Substances

In 40 CFR 302.4(a), EPA defines Listed Hazardous Substances to include "...the elements and compounds and hazardous wastes appearing in Table 302.4..." (emphasis added). This definition encompasses all materials, including hazardous wastes identified by name in the §302.4 Table. The fact that a chemical listed by name may also be designated as a RCRA hazardous waste (e.g., waste codes assigned) is irrelevant in how it is identified in the §302.4 Table.

For "unlisted" hazardous substances, 302.4(b), states "...a solid waste, as defined in 40 CFR 261.2, which is not excluded from regulations as a hazardous waste under 40 CFR 261.4(b), is a hazardous substance under section 101(14) of the Act if it exhibits any of the characteristics identified in 40 CFR 261.20 through

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261.24." Therefore, a hazardous waste which cannot be excluded from RCRA waste management regulations per §261.4(b) is an "unlisted" hazardous substance if: (1) the chemical name is not found in the list of hazardous substances, and (2) the waste exhibits a characteristic of ignitability, corrosivity, reactivity, or toxicity ("D" coded waste).

Based on these two definitions, acetone (listed by name at 2270 kg) is a "listed" hazardous substance. Since the definition of "listed hazardous substance" specifically includes hazardous wastes, acetone remains a listed hazardous substance even though it carries the characteristic of ignitability in 40 CFR 261.21 when a hazardous waste. Therefore, acetone cannot become an "unlisted" hazardous substance until such time EPA removes acetone from the §302.4 list of hazardous substances.

Isoamyl alcohol is not listed in the §302.4 Table. As a material, this chemical is not a hazardous substance. As a hazardous waste, isoamyl alcohol meets the defining criteria for the RCRA characteristic of ignitability (D001). Because Congress specifically stated that all RCRA hazardous waste must be included as hazardous substances, isoamyl alcohol, when a hazardous waste, becomes a hazardous substance based on the "unlisted" application.

The RQ value for a hazardous substance is based, if not by the "hammer" provision, on results generated through specific modeling — primary and secondary criteria. This criteria is impartial to whether the chemical is a product or waste; the regulatory status of the chemical has no bearing on the characteristics of the chemical. Hence, the primary and secondary criteria results obtained through modeling is not affected by the regulatory definition (i.e., material or waste) of the chemical.

#### RQ Value Assignment

Assignment of an RQ value to a hazardous substance is defined in 40 CFR 302.5. For a "listed" hazardous substance, §302.5(a) specifically states, *"The quantity listed in the column "Final RQ" for each substance in Table §302.4... is the reportable quantity (RQ) for that substance."* Based on §302.4, a "substance" (i.e., listed substance in this context) is the element, compound and hazardous waste listed in Table §302.4. No exceptions to this statement are presented in §302.5.

The RQ value assigned for an "unlisted" hazardous substance is addressed in §302.5(b), *"Unlisted hazardous substances designated by §302.4(b)..."* This introductory statement specifically identifies that the assignment of an RQ value for unlisted hazardous substance applies only to RCRA hazardous wastes designated with a "D" waste code and for which are not specifically "listed" in the §302.4 Table.

It is important to recognize that the assignment of a waste code to a RCRA hazardous waste is to address the proper management and disposal of that hazardous waste as defined in RCRA. Waste code criteria and assignments are not a consequence of any requirement or action under CERCLA.

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#### Determination for Notification

Notification of a release of a hazardous substance is made whenever the RQ amount of a hazardous substance is released into the environment. For example, a release of at least 2,270 kg of acetone to the environment (including a containerized spill) within a 24-hour period is a release of an RQ amount of the hazardous substance acetone.

To determine if notification is required for releases of mixtures and solutions of hazardous substances, CERCLA applies the "mixture rule" [40 CFR 302.6(b)(1)(i)]. The use of the mixture rule hinges on knowing the concentration of constituents present within the mixture. If concentrations are known, the mixture rule provides that releases must be reported as soon as a component hazardous substance of the mixture is released in an amount greater than or equal to its RQ. Under this rule, hazardous substances are not additive. For example, if one-half of an RQ of each of two hazardous substances in the mixture is released, CERCLA hazardous substance notification is not required.

If the specific concentrations of the hazardous substance constituent(s) in the mixture are not known, a release must be reported when the amount released of the constituent(s) comprising the unknown concentration of the mixture reaches the RQ for the hazardous substance having the lowest RQ. For example, two constituents comprise a five pound mix. The RQ value for the constituents is one pound and ten pounds. If one pound or more of the mixture is released into the environment, an RQ notification is required based on the constituent with the one pound RQ value.

The application of the CERCLA mixture rule does not affect the designation of "listed" or "unlisted" hazardous substances (40 CFR 302.4), nor does it in any way alter the designation of the RQ value assigned to a given hazardous substance (40 CFR 302.5)

#### Application to the DOT HMRS

The requirements for determining an RQ for purpose of DOT regulations is located in §171.8 and §172.101, Appendix A. The requirement to assign the RQ value is addressed in §172.101, Appendix A, paragraph 1, "...that all hazardous substances as defined in 42 U.S.C. 9601(14) be listed and regulated as hazardous materials..." (codified in 40 CFR 302.4 and 302.5). The criteria to determine if a release of an RQ amount is a release requiring notification (e.g., an RQ in a single package) is addressed in 40 CFR 302.6 and 49 CFR 171.15.

Three letters issued by RSPA concerning the assignment of RQ values to hazardous waste has confused this subject since they do not agree with RRI's understanding of the CERCLA process for identifying the hazardous substance and assigning the RQ value. These letters are Reference Nos. 99-0145 (June 28, 1999); October 21, 1997 (Mr. Bill Barrow); and 02-0111 (September 11, 2002). All three letters are enclosed for your convenience.

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Reference No. 99-0145 (June 28, 1999) and Letter to Mr. Bill Barrow (October 21, 1997)

The June 28, 1999, letter lists eight questions (Q) with RSPA's responses (A). Questions 7a and 7b concern RQ issues. In question 7a, RSPA is presented a scenario with 1,1,1-trichloroethane and trichloroethylene, F001 and F002, respectively. Please note that 1,1,1-trichloroethane (RQ=1000 pounds) and trichloroethylene (RQ=100 pounds) are both listed hazardous substances. The letter states:

- Q7a. "...If the actual concentration is not known, then the reportable quantity for the entry F001 and F002 would be the threshold for determining if the material is a hazardous substance. Is this correct?
- A7a. Yes."
- Q7b. "Use the same scenario as in 7(a) above except that the concentrations of each constituent is not known to be within a specified range. In this case, would I calculate the highest range limit for each constituent and use that to determine if there is a reportable quantity?
- A7b. If the exact concentration of each constituent is not known or is known only approximately or within a specified range, the reportable quantity for the entry F001 or F002 is the threshold for determining if the material is a hazardous substance."

Based on RRI's understanding, the CERCLA determination for the identity of a hazardous substance and the assignment of the RQ value differs from RSPA's responses. The resources for this conclusion are the April 4, 1985, RQ final rule; EPA guidance publication, "Questions and Answers on Release Notification Requirements and Reportable Quantity Adjustments", Publication 9360.7-14, PB 94-963403, EPA/540-R-94-005; and subsequent conversations with the EPA Hotline CERCLA group. We believe, if a given constituent is listed in the list of hazardous substances, the RQ value used is that associated with the listed constituent. The fact that the listed constituent is also a hazardous waste (RCRA) is not relevant in assigning the RQ value [40 CFR 302.4(a) and (b), and 40 CFR 302.5(a) and (b)]. For example, both 1,1,1-trichloroethane and trichloroethylene are listed on the hazardous substance list. Therefore, the RQ value assigned to each constituent, regardless of applicability to RCRA, is the listed value. The "assignment" of the RQ value has nothing to do with knowing the concentration of the constituent. The CERCLA mixture rule addressed in 40 CFR 302.6(b)(1)(i) is used for known concentrations. If any one or more of the hazardous constituents of the mixture or solution are unknown, then the applicability of release reporting is affected, not the assignment of the RQ value. When to report the release of an RQ amount, as supported in 49 CFR 171.15, is found in 40 CFR 302.6.

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The only time the F001 or F002 code is used as the "default" RQ value is if the waste itself is unknown or contains unknown constituents (unknown wastes present other concerns beyond CERCLA, and is not consistent with proper waste management operations). Therefore, based on our understanding of 40 CFR 302, the hazardous substance identity in Q7a and Q7b is the listed hazardous substance (e.g., 1,1,1-trichloroethane at 1,000 pounds and trichloroethylene at 100 pounds). The RQ value is based on the "assigned" RQ for each listed hazardous substance. The fact that the actual concentration is not known does not alter the identity or reassign the RQ value of the hazardous substance.

The second letter, dated October 21, 1997 again concerns the selection of the RQ value based on the waste constituent or the applicable waste stream. An example was provided in this letter using 1,1,1-trichloroethane, a listed hazardous substance with an RQ of 1000 pounds. Below is an excerpt from the letter:

"...1,1,1-trichloroethane is the only constituent and its concentration in a mixture or solution is known, then the RQ for 1,1,1-trichloroethane is appropriate. However, if the waste's constituent or its respective concentration is unknown, then the appropriate RQ is that which is assigned to the waste stream. For example, 10 lbs. is the appropriate RQ for wastes included under Waste Stream F001 (the waste stream for 1,1,1-trichloroethane)." (emphasis added)

Again, our conclusion (and that of the CERCLA hotline) differs from your view that the RQ value for the 1,1,1-trichloroethane and trichloroethylene is based on the waste code F001 and F002, respectively. Rather, since both hazardous constituents are listed by name in the hazardous substance list and a listed RQ value is assigned to each, the reporting requirement is based on the constituent's listed RQ value and not the default "F" waste code value. It is our understanding the only time the default "F" waste code RQ value is used for assignment of the RQ value is if the waste is, or contains, an unknown waste.

The following conclusions are provided based on our research of RQ designation and applicability of the CERCLA mixture rule as integrated into the DOT regulations.

- A. A package contains an F001 and F002 waste consisting of 150 pounds of 1,1,1-trichloroethane and 150 pounds of trichloroethylene. Both constituents are listed by name on the hazardous substance list [40 CFR 302.4(a)] and are assigned their respective RQ values of 1000 pounds and 100 pounds [40 CFR 302.5(a)]. For EPA release reporting and DOT transport purposes, an RQ is present for the trichloroethylene (49 CFR 171.8).
- B. A package contains an F001 and F002 waste consisting of 1,1,1-trichloroethane and trichloroethylene. The net weight of the waste is 300 pounds. The identity of all constituents are known, however, the concentration of each is unknown [40 CFR

*All Good  
EPA Ready  
best!*

*F001 - 10      111 - 1000  
F002 - 10      ethylene - 100*

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302.6(b)(1)(ii)]. Both constituents are listed by name on the hazardous substance list (40 CFR 302.4(a)) and are assigned their respective RQ values of 1000 pounds and 100 pounds [40 CFR 302.5(a)]. For EPA release reporting and DOT transport purposes, an RQ is present for the trichloroethylene (49 CFR 171.8).

C. A package contains an unknown waste, net weight of 300 pounds. Halogenated hydrocarbons used in large scale and small scale degreasing operations (e.g., used as a solvent) are suspected based on process knowledge. The waste is, therefore, assigned waste codes F001 and F002. No other information is available on the waste at this time. Since the constituents are not known, the RQ value assigned is based on the F001 and F002 waste codes each at 10 pounds. Concentrations of the unknown constituents cannot yet be obtained, therefore, the CERCLA mixture rule cannot be used [40 CFR 302.6(b)(2)(i)] and an RQ exists for both F001 and F002.

*All  
Good*

→ D. A package contains some trichloroethylene and other constituents yet to be determined. The net weight is 300 pounds. Halogenated hydrocarbons used in small scale cleaning operations (e.g., used as a solvent) are suspected based on process knowledge. The waste is, therefore, assigned waste codes F002 and D040. No other information is available about the waste at this time. Since the concentration of the constituents is not known, the CERCLA mixture rule cannot be employed. However, one constituent (trichloroethylene) of the mixture is known to be a listed hazardous substance, therefore, the constituent and its assigned RQ value (100 pounds) apply. The remaining constituents are not yet known. For these unknown constituents, the RQ assigned to each given waste stream (e.g, F002) applies. Hence, this waste is an RQ for trichloroethylene and F002.

*Wrong -  
per EPA.  
Since you  
have unknown  
constituents.*

Please provide comments for the above scenarios (A, B, C, and D). Since our views differ, would you provide clarification for your RQ value assignment and determination processes and provide any information that indicates RSPA's authority to change the identity of the hazardous substance and its assigned RQ value.

Reference No. 02-0111 (September 11, 2002)

The September 11, 2002 letter lists three specific questions concerning RQs. Question 2 states:

Q2: "A D001 hazardous waste contains water and Ethyl cyanide, also known as "Propionitrile, 3, 6.1, UN 2404, PG II." The concentration of Ethyl cyanide is not known. Its RQ is 4.54 kg (10 pounds). The net weight of the waste per package is 25 pounds. Although it is possible the mixture in one package may contain an RQ of Ethyl cyanide, my company does not know what specific amount or maximum concentration is present. Should we use the RQ of 45.5 kg (100 pounds) or the RQ for Ethyl cyanide to determine if the waste is a hazardous substance?"

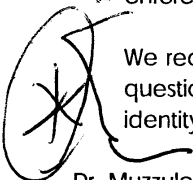


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A2: "Because the concentration of the waste constituent is unknown, the RQ for D001 must be used."

RRI does not agree with RSPA's conclusion. Ethyl cyanide is a "listed" hazardous substance [40 CFR 302(a)] with an assigned RQ value of 10 pounds. The fact that the amount of ethyl cyanide in this water mix is not known does not alter its listed identity or assigned RQ value. We agree the CERCLA mixture rule cannot be employed. Therefore, an RQ exist in this package for the "listed" hazardous substance at its 10 pound RQ value. The waste code D001 has no applicability to this RQ determination.

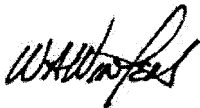
Based on RSPA's conclusion, if a package of this ethyl cyanide/water mix were to release at least 10 pounds of contents to the environment (in a 24 hour period), a notification to the National Response Center for release of an RQ amount of a hazardous substance is not required. This lack of action would violate 40 CFR 302.6 and subject the person responsible for notification to CERCLA criminal enforcement action in 40 CFR 302.7.

 We request RSPA to provide an explanation of the RQ determination process used in response to question 2 and the citation that grants RSPA the authority to change the CERCLA hazardous substance identity and assigned RQ value.

Dr. Muzzullo, RRI believes it is imperative that RSPA and CERCLA work to arrive at a single application for hazardous substance determinations. Conflicting designation criteria, as illustrated in the referenced RSPA letters, is providing consignors and carriers a false sense of security. If they comply based on letters from RSPA they may violate CERCLA reporting requirements. Currently, a consignor and carrier must check each package for hazardous substances based on CERCLA regulations and then again based on RSPA's application of CERCLA's requirements, an application RRI believes is inconsistent with the regulations in 40 CFR 302.

Thank you for the opportunity to submit this letter of clarification. RRI looks forward to your timely reply.

For Regulatory Resources, Inc.,



Wade A. Winters, CET, CHMM  
President

WAW/lom

Enclosed: Letter, June 28, 1999, Reference No. 99-0145  
Letter, October 21, 1997 (Mr. Bill Barrow)  
Letter, September 11, 2002, Ref No. 02-0111