



U.S. Department  
of Transportation

**Pipeline and  
Hazardous Materials Safety  
Administration**

MAY 19 2005

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

Mr. Michael K. Jeffers  
Compliance Manager  
Rebec LLC  
P.O. Box 658  
Edmonds, WA 98020

Ref No. 04-0282

Dear Mr. Jeffers:

This is in response to your letter dated December 6, 2004, concerning our November 24, 2004 letter, regarding the identification of dental amalgam as a hazardous substance under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you provide documentation to support your view that dental amalgam is not a hazardous substance.

Dental amalgams contain mercury metal alloyed with silver and smaller amounts of other metals. As we stated in our November 24, 2004 letter, mercury is regulated as a hazardous substance under the HMR. Thus, when dental amalgam is offered for transportation in commerce, the shipment is subject to all applicable HMR requirements.

I hope this information is helpful.

Sincerely,

Susan Gorsky  
Acting Director  
Office of Hazardous Materials Standards



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Appendix A

December 6, 2004

*"Rebec has taken care of everything! I don't even have to call for pickup and Rebec provides all the documentation I need."*

Dr. Amy Norman

Mr. John A. Gale  
Chief, Standards Development  
Office of Hazardous Material Standards  
Research and Special Programs Administration  
Attn: DHM-10  
U.S. Department of Transportation  
400 7<sup>th</sup> Street SW  
Washington, DC 20590-0001

Dear Mr. Gale:

Thank you for your response to my letter regarding clarification of whether dental amalgam would be identified as a hazardous substance because of the presence of mercury (Ref No. 04-0245). I respect your response and will abide by its interpretation. I do however wish to rebut this determination.

*"The Catch<sup>Hg</sup> system makes mercury management as easy as it could possibly be."*

Dr. Jack Kall

Your response stated that dental amalgam would designate as a hazardous substance due to the presence of mercury. Appendix A of the Hazardous Materials Table (HMT) lists mercury and mercury compounds as hazardous substances in quantities greater than their listed RQs. Mercury is listed with a RQ of 1 pound while there are mercury compounds with 10 pound RQs or greater. It was always my understanding that this table is applicable to the listed material and its mixtures and solutions. Compounds are not mixtures or solutions so they were listed in addition to any single elemental constituent of the compound that might be present in them. Compounds are chemically bonded and are therefore not considered a mixture.

*"...When it comes to mercury separator systems, I want the best technology, product and service available. For me that's clearly the Catch<sup>Hg</sup>"*

Dr. Paul G. Rubin

An example is mercuric nitrate with an RQ of 10 pounds. This compound is composed of 58% by weight mercury. Ten pounds of mercuric nitrate would contain nearly 6 pounds of mercury. Therefore the 10 pound RQ would be meaningless as it would reach the RQ for an elemental constituent of the compound, elemental mercury, before amassing 2 pounds of mercuric nitrate.

I have included with this letter some supporting documentation. Attached to this letter is a document entitled "DENTAL AMALGAM". This document can be found on the US Air Force Dental Investigation Service website <http://www.brooks.af.mil/dis/DMNOTES/amalgam.pdf>. In this publication it states that in this reacted alloy elemental mercury does not exist. It further states that it is all consumed within two hours of trituration. The amalgam is a crystallized complex of metals no longer elemental mercury nor any of its other elemental components but rather a new and stronger inseparable crystalline matrix. Upon Trituration it contains inseparable compounds of silver mercury and tin mercury.

Secondly, also included with this letter is a paper written by Dr. Robert S. Baratz entitled "Key Points about Amalgam Safety". In this publication it states that "The final product - called amalgam - is a completely different material

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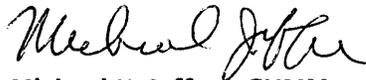
that contains a variety of complex compounds. In one sense it is similar to mixed concrete. You start with cement, sand, stone, and water. The final product is concrete. You can't get the original compounds back without chemically decomposing it." One of the key definitions of a mixture is that the components of the mixture still retain their own properties. In the case of amalgam the mercury is no longer liquid, does not corrode or dissolve other metals, and is inseparable from the other elements except by chemically decomposing the alloy.

Although it may not have any weight of evidence in this matter I have also included a copy of an email I received in response to a similar request of Transport Canada (TC) for the determination if dental amalgam would be a dangerous goods when transported. It was Transport Canada's interpretation that this material would not be a dangerous goods for transportation purposes.

I ask that you reevaluate your original response to my letter dated October 4, 2004 regarding identification of dental amalgam as a hazardous substance. Dental amalgam does not contain elemental mercury, it is not a mixture or solution. Dental amalgam is a compound and as such is not listed in appendix A of the HMT as are other compounds that contain mercury. Please contact me if you have any other questions regarding this request.

Thank you for your assistance on this regulatory interpretation.

Sincerely,



Michael K. Jeffers, CHMM  
Compliance Manager  
Rebec LLC