



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

**JUN 29 2018**

Barbara Konrad  
Technical Consultant  
Currie Associates  
10 Hunter Brook Lane  
Queensbury, NY 12804

Reference No. 18-0011

Dear Ms. Konrad:

This letter is in response to your January 19, 2018, letter and subsequent phone conversations requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to small quantities of hazardous materials. You state that your client ships machine parts that may still have hazardous materials residue. You describe your client's decontamination and packaging procedures for the different machine parts, noting that while certain parts may only have surface residue, others could contain up to 1 gram or 1 milliliter of hazardous materials. Specifically, you ask if machine parts shipped with potential hazardous materials residue on their surface and/or inside would fall under the requirements of the HMR.

Whether these shipments fall under the purview of the HMR will depend on several factors, including the type of material and the nature of the relationship between the material and the parts being shipped. If the decontamination process eliminates all the hazardous materials on the surface of the machine parts, or cleans the parts to a point where the material would no longer meet the definition of a hazardous material, then those parts would no longer fall under the requirements of the HMR. Machine parts containing hazardous material on the inside may be shipped under the De Minimis exception if the shipment meets the requirements in § 173.4b. Further, it may be possible to ship these materials as dangerous goods in equipment, machinery, or apparatus provided the hazardous materials are integral to the equipment. Please note that residue in components of equipment or machinery may be considered integral if the residue is necessary to the function of the equipment, its removal would cause damage to the equipment, or it performs some other function necessary to the equipment such that it cannot be removed from the equipment while it is in transportation.

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

T. Glenn Foster  
Chief, Regulatory Review and Reinvention  
Standards and Rulemaking Division

**January, Ikeya CTR (PHMSA)**

Wolcott  
173.46  
Exceptions

18-0011

**From:** INFOCNTR (PHMSA)  
**Sent:** Friday, January 19, 2018 4:57 PM  
**To:** Hazmat Interps  
**Subject:** FW: Interpretation Request - Applicability of HMR to Return Shipment of Equipment and Spare Parts  
**Attachments:** CurrieAssociatesLetterofInterpretation.pdf

Hello All,

Please see the below and attached request for interpretation.

Regards,  
-Breanna

**From:** Chris Yakush [mailto:Chris@currieassociates.com]  
**Sent:** Friday, January 19, 2018 2:53 PM  
**To:** Kelley, Shane (PHMSA) <shane.kelley@dot.gov>; PHMSA HM InfoCenter <PHMSAHMInfoCenter@dot.gov>  
**Cc:** Barbara Konrad <Barbara@currieassociates.com>; Tom Ferguson <Tom@currieassociates.com>  
**Subject:** Interpretation Request - Applicability of HMR to Return Shipment of Equipment and Spare Parts

Dear Shane and HMIC,

Attached please find an interpretation request on behalf of our client, a large manufacturer of semiconductor manufacturing equipment and spare parts. Specifically, we would like an interpretation on the applicability of the Hazardous Materials Regulations (HMR) to the return shipment of equipment and spare parts exposed to hazardous materials which may contain trace quantities (milliliters or milligrams) of hazardous materials contamination.

Feel free to contact us if you have any questions.

Best regards,  
Chris

Christine Yakush  
Vice President  
Currie Associates, Inc.  
10 Hunter Brook Lane, Queensbury, NY 12804  
Phone: 518/761-0668 \* Fax: 518/792-7781  
<http://www.currieassociates.com>  
[chris@currieassociates.com](mailto:chris@currieassociates.com)  
[Online Training - www.dgcomplianceonline.com](http://www.dgcomplianceonline.com)  
Your Compliance Solution to Hazardous Materials/Dangerous Goods Transportation Services & Support

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*This information is intended to provide interpretative and authoritative information in regard to the subject matter covered as a service to our clients and has been answered to the best of our ability based on the information provided to us. We do not guarantee the accuracy or completeness of any such interpretation or information, however, nor do we warrant that compliance with any advice we provide will guarantee compliance with any legal or regulatory requirements. Our statements or opinions do not convey legal interpretation and government authorities or legal counsel should be contacted for such a response.*



**Currie Associates, Inc.**

**The Global Compliance Professionals**

*Training • Auditing • Consulting*

January 19, 2018

US Department of Transportation  
PHMSA Office of Hazardous Materials Standards  
ATTN: PHH-10 East Building  
1200 New Jersey Avenue, SE  
Washington, DC 20590-0001  
Via email: [Phmsa.hm-infocenter@dot.gov](mailto:Phmsa.hm-infocenter@dot.gov)

Dear Hazardous Materials Information Center,

Currie Associates, Inc. is making this request for interpretation on behalf of our Client, a large manufacturer of semiconductor manufacturing equipment and spare parts. Specifically, we would like an interpretation on the applicability of the Hazardous Materials Regulations (HMR) to the return shipment of equipment and spare parts exposed to hazardous materials which may contain trace quantities (milliliters or milligrams) of hazardous materials contamination.

Many of the parts meet the requirements of the de minimis exception in 49 CFR 173.4b and can be shipped in that manner. However, certain parts have been exposed to hazardous materials which are not eligible for this exception because they are in packing group I or, for transportation by aircraft, are not authorized on a passenger aircraft.

The equipment and spare parts in question vary in design and have been classified by our Client engineers into two broad categories:

- (1) **Parts** which include sealed ampoules or which include an internal reservoir or chamber into which up to 1 gram or 1 ml of hazardous material process chemical contamination may be trapped; These are identified by our client as "high risk parts".
- (2) **Parts** which do not include any sealed ampoules or chambers and which are highly unlikely to contain any hazardous material contamination. Examples of these types of products include Electrostatic Chucks and Manometers. These are identified by our client as "low risk parts".

Regardless of the category of the Part, we believe that the decontamination procedures in place for the parts and the standard packaging used eliminate the presence of any appreciable quantity of hazardous materials and consequently any unreasonable risk in transportation. **We therefore request confirmation** that these parts are not subject to the Hazardous Materials Regulations when prepared for shipment as outlined herein.

#### **Decontamination Procedure**

Equipment and spare parts are routinely maintained, repaired or replaced by Client Field Service Engineers (FSEs). In the event a part must be replaced, the original part is removed from the equipment and decontaminated using the following Standard Operating Procedure (SOP). It is our belief that this procedure ensures the removal of any appreciable quantity of hazardous materials residue or contamination:



#### Procedure for Low Risk Parts

- Solid chemical residues are removed by brushing or scraping
- All accessible surfaces of the parts are wiped with deionized water or solvent
- Parts are dried with clean dry air or clean wipe
- Wipe tests are conducted to determine level of residual contamination (ion, pH and HF)

#### Additional Procedure for High Risk Parts

- All gas lines are purged with an inert gas as specified in the appropriate Product Service or Technical Manuals, but in no case for less than 30 pump and purge cycles.
- All liquid bearing lines and tanks (especially acid or base) are flushed with deionized water until neutral pH is verified; then the lines are emptied of remaining water.
- All liquid bearing lines are capped.

Following the decontamination procedure, the FSE checks for any visible or tangible signs of hazardous material contamination and repeats the decontamination process if necessary until all visible or tangible signs of hazardous material are absent.

In some cases, a customer will request a Failure Analysis of the part and it therefore cannot be decontaminated as noted above and must be returned "as is". In these situations, the FSE will simply purge the part with inert gas, drain all free liquid from the part and cap any outlets before it is shipped. These parts are more likely to contain hazardous material residue. The exact quantity is impossible to determine but is generally regarded as being not more than a few milligrams or milliliters.

#### **Packaging Procedure**

All parts returned to the Client are packaged for shipment using three layers of containment. We believe this packaging adequately protects the parts and meets the drop and compressive load standards in 49 CFR 173.4b(a)(5). All parts are cushioned (which also acts as an absorbent), protected against movement and are packed in:

1. A primary container which is sturdy, resistant to any chemical contamination that may be present and which is capable of preventing any leakage of chemicals into the secondary or outer packaging.
2. A secondary packaging which is typically a poly bag and
3. An outer packaging, typically a good quality strong fiberboard box or crate.

#### **Hazard Communication**

Every package containing a return part is accompanied by a Return Authorization (RAM) Tag which identifies the part, all hazardous materials the part has been exposed to during its operation and a notation regarding whether the part has been decontaminated or not. This RAM Tag is placed inside and on the outside of the package to alert anyone coming into contact with the package or opening the package of the possible trace quantities of hazardous materials that may be present. The Tag would also serve to communicate important information to emergency response personnel in the event a package is damaged in transportation.

#### **Specific Request for Interpretation:**

We believe that all of return parts our client offers for transportation, when prepared and packaged as described herein, do not pose an unreasonable risk in transportation and therefore are not subject to the HMR. In support of this position we offer the following information:

- As precedent, we refer you to Interpretation No. 04-0285 (attached) in which your Office agreed that trace quantities of hazardous materials do not necessarily require an item to be classified as a hazardous material for transportation when packaged in a way to protect the item and prevent exposure or release.

- It is our opinion as the offeror of the part that the decontamination procedures outlined herein are more than adequate to remove all but trace quantities of hazardous material contamination and therefore that an unreasonable risk in transportation no longer exists for these parts.
- Even if parts are not decontaminated it is unlikely that more than a few milligrams or milliliters of hazardous material residue would remain in the part when offered for transportation.
- Parts that may contain the residue of a hazardous material not eligible for the de minimis exception are no more likely to pose an unreasonable risk in transportation than those which contain the residue of hazardous materials eligible for the exception.
- Because of the multi-layer packaging procedures and of the trace amounts of hazardous materials potentially present in the package, the potential for any unintentional release during an incident is very low.
- In the event of package failure during transportation, the release of any detectable quantity of hazardous material is highly unlikely. It is also highly unlikely that the quantity of residue (milligrams or milliliters) in the parts could cause or contribute to a fire or pose any health risk.
- We believe that offering these parts as hazardous materials could even be counterproductive to emergency responders. Marking, labeling and documenting these as hazardous materials on shipping papers could detract attention from emergency responders and carriers dealing with packages containing aircraft components, automotive parts and machinery that contain highly flammable fuel residue or other hazardous materials in amounts that could spill or be unintentionally released in transportation.

Please feel free to contact us if there are any questions regarding this request. We would be happy to provide any additional relevant information you may need in order to reach your decision.

Sincerely,



Barbara Konrad  
Technical Consultant