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713/624-1900 Fax: 713/624-1999

# USEcology

an American Ecology company

July 13, 1993

Mel Silberberg, Chief Waste Management Branch Office of Nuclear Regulatory Research USNRC Washington, D.C. 20555

Dear Mr. Silberberg:

Enclosed is an evaluation of the use of US Ecology's Radioactive Waste Shipment and Disposal Manifest as shipping papers in accordance with the requirements of 49 CFR, part 172, subpart C.

References:

- a) 49 CFR, Parts 100 to 177, revised as of October 1, 1992.
- b) US Ecology's Radioactive Waste Shipment and Disposal Manifest, revision April 1991.

49 CFR shipping paper references are annotated on the attached US Ecology disposal manifest where applicable; however, the following references need further explanation:

 172.201 (a) (4) - Additional information is permitted provided it is not inconsistent with the required description and this additional information is placed after the basic description required by 172.202 (a).

All information on the USE manifest is related to the waste which is being transported but in more detail than required by this subpart.

2. 172.202 (a) (2) - Hazard Class 7 for radioactive material is not included in the proper shipping name of this revision of the USE manifest. This will be added in the next revision; however, hazard Class 7 can be handwritten for the applicable radioactive material type, proper shipping name.

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 172.203 (d) (iii), (iv) - These statements for fissile material can be added to the continuation sheets for each package.

In conclusion, the US Ecology manifest meets the intent of shipping papers per 49 CFR, part 172, subpart C. It will provide all the information required by the Department of Transportation (DOT) and necessary for emergency situations.

Thank you for the opportunity to present this evaluation. Please call me at 1-800-999-7160 if I can be of any further assistance.

Sincerely,

Mark R. Ledoux / Deputy Chief Radiological Control and Safety Officer

Attachment

cc: Art Palmer Jim Shaffner

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ENCLOSURE 2

# CHEM-NUCLEAR SYSTEMS, INC.

140 Stoneridge Drive Columbia, South Carolina 29210

August 5, 1993 CS-0284-93

Mel Silberberg, Chief Waste Management Branch Office of Nuclear Regulatory Resea Mail Stop NLS-260 U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Dear Mr. Silberberg,

Thank-you for the opportunity to address the issue of using the current radioactive waste manifest or NRC's earlier version of the uniform radioactive waste manifest as a DOT hazardous material shipping paper.

From the public meeting you convened June 15, 1993, it was evident that many of the people in attendance were not happy with the latest draft revision that separated the DOT hazardous material shipping paper information (Form 540) from the disposal information (Form 541). These changes made by NRC based on discussions and meeting with the DOT have resulted in a very burdensome system with unnecessary repetition. I hope that my attached comments can help resolve these issues and revert the uniform radioactive waste manifest back to the earlier, easier to use version.

If you have any questions or I can provide you with more information, please let me know.

Sincerely,

CHEM-NUCLEAR SYSTEMS, INC.

Mark S. Lewis Manager, Customer Service

MSL/vsj

# USING A LOW-LEVEL RADIOACTIVE WASTE MANIFEST AS A DOT HAZMAT SHIPPING PAPER Mark S. Lewis, Chem-Nuclear Systems, Inc.

#### INTRODUCTION

The following is intended to support the practice of using the current low-level radioactive waste (LLW) disposal manifests as and to comply with the Department of Transportation (DOT) hazardous material shipping papers requirements found in 49 CFR 172 Subpart C. The current low-level radioactive waste manifests have been designed by the disposal facility operators and approved by their respective state licensing agencies for use in the transportation and disposal of LLW.

The industry, federal agencies, and state agencies have for over twenty five years recognized and accepted the current LLW disposal manifests as DOT hazardous material shipping papers. One of the NRC's earlier versions of the proposed Uniform Radioactive Waste Manifest was a slightly modified version of the current manifests in use. Based on DOT comments and requests the NRC has designed their latest draft of the uniform radioactive waste manifest. The majority of industry and many regulatory personnel are not in favor of the latest version because of what some perceive as a misinterpretation of what is required and an unnecessary increase in paperwork that has lead to a lot of repetition. Many of the following comments were collected from persons present at the forum that NRC held to discuss their latest revisions to the uniform radioactive waste manifest.

The current manifest, as designed and approved for use at the Barnwell Waste Management Facility, is a multifunction form. These manifests are intended to comply with a variety of requirements that include:

- DOT's he ardous material shipping paper requirements per 49 CFR 172 Subpart C.
- Nuclear Regulatory Commission's (NRC) LLW transfer for disposal requirements per 10 CFR 20.311 (or Appendix F).
- NRC requirements for transfer of licensing control per 10 CFK 30, 40, and 70 for byproduct, source material, and special nuclear material.
- State of South Carolina issued requirements per S.C. Radioactive Materials License 097.
- DOE requests for collection and maintenance of disposal records for the LLW national database.
- Chem-Nuclear Systems procedures for the long-term maintenance of records and the protection of employees.

### DOT HAZMAT SHIPPING PAPER COMPLIANCE

One of the major considerations in the design of the Barnwell LLW disposal manifest was the compliance with the DOT hazardous material shipping paper requirements found in 49 CFR 172 Subpart C. The following table identifies all of the applicable requirements of 49 CFR 172 Subpart C and the corresponding method of compliance on the Barnwell LLW disposal manifest (enclosed):

Reference (172.***)	Summary of DOT Reference	Compliance by Manifest
201(a)(1)	Hazardous and nonhazardous material described on the same shipping paper	Low-level radioactive waste and non- hazardous waste are not typically shipped to the disposal facility on the same truck. But, if hazardous and nonhazardous material were to be identified on the manifest Block 6 has the radioactive material basic descriptions preprinted first and the nonhazardous material will appear after.
201(a)(4)	A shipping paper may contain additional informationnot inconsistentmust be placed after the basic description172.202(a)	In order to achieve our multifunction form goal, there are many pieces of additional information, none of which are inconsistent and all of which are placed after the basic description. The only things that appear before the basic description are names and addresses of shipper, carrier, and receiver and identification/permit numbers. These things appearing before the basic description is accepted and endorsed by the DOT as evidenced by their acceptance of EPA's hazardous waste manifest (172.205).
201(c)	Continuation page numbering	In order to list all the information specific to each package that DOT requires per 172.203(d) continuation pages are a necessity for LLW. Quite often 100 drums are shipped at one time. The cover page and each continuation page has a location for consecutively numbering pages.
201(d)	Emergency response telephone number	In Block 1 there is a blank location for identifying the emergency response telephone number.

202(e)	The shipping descriptionmust include: (a)(1) proper shipping name (PSN), (2) hazard class or division number, (3) identification number (ID#), (4) packing group, and (5) total quantity.	Block 6 of the manifest is set up and partially preprinted to ensure compliance with this requirement. The preprinted PSN and ID# have been changed and will be made available in order to compliance with the HM-181 transition period of October 1, 1993. To assist the emergency responders in material identification, CNSI has shadowed Block 6 so it is easier to see and can be distinguished from other information on the manifest.							
202(b)	The basic description (PSN, hazard or division number, and ID#) must appear in sequence.	Block 6 has these three required entries (radioactive material is not subject to packing groups) in sequence.							
202(c)	The total quantitymustcovered by one description. The type of packagingmay	Block 6 has a blank for identifying the number of packages per basic description. The type of package is entered on a per package basis on the continuation pages in column 32.							
202(d)	Technical and chemical group names	Radioactive materials don't have technical name or chemical group names that need to place in parentheses because of the radionuclide and chemical/physical form requirements of 172.203(d).							
203(c)	Hazardous substancesRQ	Block 6 has a blank available for those radioactive material packages shipped containing a reportable quantity.							
203(d)(1)	The words "RADIOACTIVE MATERIAL"	Block 6 will have this requirement preprinted on the manifest form, if required, by the time the HM-181 transition period must be complied with.							

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203(d){2)	The description for a shipment must includethe name of each radionuclide in the radioactive material	This requirement does not state or require that the radionuclides be listed on a per package basis. It states and requires radionuclides to be listed "for a shipment for each classification", yet the manifest does require that each radionuclide be listed per package in Column 21.
203(d)(3)	Physical and chemical form	This requirement does not state or require that the physical and chemical form be listed on a per package basis. It states and requires the physical and chemical form to be listed "for a shipment for each classification", yet the manifest does require that the physical and chemical form be list for each package in Columns 24 and 25.
203(d)(4)	Activity contained in each package Highway route controlled quantity entry	This requirement does state and require that the activity be identified for the package. The manifest requires that the total package activity be identified in Column 23. This requirement does not state or require that the activity be identified for each radionuclide in the package, yet the manifest that the activity per radionuclide per package be identified in Column 22. Radioactive waste never reaches that highway route controlled quantity level, but if it did shippers are instructed to make an entry in Block 6 in association with the basic description.
203(d)(5)	Category of label applied to each package	Column 36 requires the category of label to be identified per package.
203(d)(6)	Transport index (TI) assigned to each yellow II and III package	Column 33b requires the TI be identified per package.

203(d)(7)	Fissile meterial	Column 35 requires NA, fissile exempt, or fissile I, II or III. Radioactive waste never falls into the fissile III category, but if it did shippers could make the warning statement on the manifest.
203(d)(8)	DOE or NRC ID marking	Block 5 has a location for making this entry.
203(k)	Technical names	Radioactive materials don't have technical name or chemical group names that need to place in parentheses because of the radionuclide and chemical/µhysical form requirements of 172.203(d).
204(a)(1)	Shipper's certification	The DOT shipper certification is preprinted in Block 18 word for word.
204(d)	Signature	There is blank in Block 18 for the shipper's signature.

The NRC, based upon DOT's comments and at the DOT's request, modified the original design of a uniform radioactive waste manifest. The NRC's original was similar to the current LLW manifests. A lot of modifications to NRC's latest version seem to have been based upon misinterpretation of the requirements, claims of intent vs. letter of the law, or upon personal desires of DOT personnel rather than specific compliance. The following are a couple of examples based upon our understanding, secondhand, of how DOT's comments, misinterpretations, claims of intent vs letter, or personnel desires have affected the most recent draft of the uniform radioactive waste manifest:

 DOT's comments resulted in multiple sets of forms, because the NRC required disposal information was interfering with the DOT required entries. When shipping radioactive waste additional information will be present on the manifest that is not specifically required by DOT for hazardous material shipping papers. This additional information is acceptable and authorized per 172.201(a)(4) because it follows the basic description entry and is not inconsistent. The regulations do not state that the additional information must follow all required entries or can't be present, it only states that it must follow the basic description required by 172.202(a). 172.202(a) includes only the proper shipping name, hazard class or division code, ID#, packing group (when applicable). In addition, the other entries are not inconsistent because the additional information contains more and different information about the packages. The additional information about the radioactive material in the package can assist a trained emergency responder in the event of an accident.

DOT personnel believes that every radioactive waste package must have a full compliment of required entries (as identified in the table above) to include the proper shipping name, hazard class or division code, and ID#. The regulations state that when multiple packages can be classified the same (same basic description) then the majority of the required entries needs to be list once for all of those packages with the only requirement for listing information on a per package basis being the activity, type label, and transport index, when applicable.

Some of the above discussion will hopefully resolve any misinterpretations on our part or DOT's. To resolve issues of intent vs letter and personal desire we need to consider the regulatory basis, the safety benefit, and the impacts. If necessary from a safety standpoint then the regulations need to be changed to require it of all shippers of radioactive material not just radioactive waste shippers through the uniform radioactive waste manifest. If there is no requirement currently in the regulations, there is no safety benefit that require a regulations change, and there are negative impacts then the current low-level radioactive waste manifests are acceptable as DOT hazardous material shipping papers and NRC's previous version is also acceptable.

### SAFETY AND EMERGENCY RESPONSE CONSIDERATIONS

The main objective of the DOT hazardous material transportation regulations is to ensure public health and safety in transportation and ensure emergency responders can safely and effectively response to hazardous materials incidents. The hazardous material shipping paper plays a major role in achieving that goal. The following is a couple of comments in regards to the use of the current manifests or the original NRC proposed uniform radioactive waste manifest as a DOT hazardous material shipping paper in achieving the safety and emergency response goals:

• The basic description (proper shipping name, hazard class or division number, and ID#) is the most important entry on the shipping paper for use by the emergency responder. With the basic description the emergency responder will use the DOT's Emergency Response Guidebook to identify the basic emergency response actions. Typically, that is all that can be expected from the first-on-the-scene responder. Law enforcement, rescue, and fire department personnel do not have the training, knowledge, and time to take advantage of the rest of the information (i.e.: activity, physical and chemical form, radionuclides) on hazmat shipping papers required of radioactive material. It is the next-on-the-scene or the specialty teams, i.e. hazmat or radiological emergency responses teams, that have the skills to utilize the additional information.

This is the reason it is unnecessary to have a full compliment of radioactive material entries for each package. When appropriate, one basic description for all the packages that can be classified by that description, followed by entries that are applicable to all the packages collectively, followed by a brackdown of each package's activity, type label, and transport index. From the standpoint of safety, if a responder for example did not know the exact radionuclide or mix of radionuclides in an individual package, but did know all of the different types of radionuclide that are in a group of packages (i.e. Type A, Radioactive material, n.o.s.; UN2982), then that responder would respond to each package as if it contained the most radiotoxic radionuclide(s), taking the conservative approach, and reducing the chance of risk. If needed, that responder could identify the

radionuclides by looking on the package label. This is the reason the regulations don't require the radionuclides to be identified on a per package basis for all of the packages cover by one basic description. Other entries that are identified on a per classification basis rather than a per package basis are justified using similar rational. The entries that must be made on a per package basis (total package activity, type label, and transport index) are specific to handling and protection control. The safety feature that seems to be missing is a package identification (ID#) so that these shipping paper entries on a per package basis can be cross referenced to a package that may be found at some distance away from an accident scene. Chem-Nuclear Systems, Inc. requires an item number on each container and this must correspond with the item number listed on the manifest continuation sheet.

The DOT hazmat shipping paper information does not need to be separated from the NRC required disposal information. As long as the additional disposal information follows the basic description and is not inconsistent it is in compliance with 172.202(a) and there to aid the first-on-the-scene responder. Then the information provided per 172.203(d) is sufficient to aid the next-on-the-scene and not reduce safety. The first-on-the-scene responders will only use the basic description. The next-on-the-scene responders will have had better training, understand the radiological information, and will have no trouble in gathering the information they need to appropriately respond to the incident.

#### CONCLUSION

Since the industry, federal agencies, and state agencies have for over twenty five years recognized and accepted the current LLW disposal manifests as DOT hazardous material shipping papers; and

Since the current LLW manifest or NRC's earlier version of the uniform radioactive waste manifest meets the letter, if not both the intent and letter of the law; and Since the main objective of the DOT hazardous material transportation regulations is to ensure public health and safety in transportation and ensure emergency responders can safely and effectively response to hazardous materials incidents for which the current LLW manifest or NRC's earlier version of the uniform radioactive waste manifest can ensure;

We conclude that the current LLW disposal manifest and the earlier, shorter version of the NRC's uniform radioactive waste manifest are legal and acceptable as a DOT hazardous material shipping papers.