TWO MINUTE TRAINING

TO: *CH2M HILL PLATEAU REMEDIATION COMPANY*

FROM: *PAUL W. MARTIN, RCRA Subject Matter Expert*
CHPRC Environmental Protection, Hanford, WA

SUBJECT: *LABORATORY STANDARDS AND APPLICABILITY OF THE "U" OR "P" HAZARDOUS WASTE LISTINGS*

DATE: *AUGUST 17, 2017*

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TWO MINUTE TRAINING

SUBJECT: Laboratory Standards and Applicability of the "U" or "P" Hazardous Waste Listings

Q: A customer wants to dispose of an unused laboratory standard consisting of the commercial chemical product aldrin dissolved in methylene chloride. The aldrin is the sole active ingredient and constitutes less than 1 percent of the mixture. The methylene chloride is the carrier and constitutes more than 99 percent of the mixture. The customer determines that aldrin is listed as a P004 hazardous waste and that methylene chloride is listed as a U080 hazardous waste. Which listing applies to this unused lab standard - P004 or U080 or both?

A: Per WAC 173-303-040 [40 CFR 261.33*(d), Comment*], "Definitions", a commercial chemical product refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. In other words, a commercial chemical product is an unused material that consists of the pure chemical, a highly technical grade of the chemical or is a mixture that contains the chemical as a sole active ingredient.

The term "sole active ingredient" can be defined as an ingredient that is the only chemically active component for the function of a product. The function of the customer's lab standard is to calibrate laboratory instruments specifically to the chemical aldrin. Therefore the aldrin is the sole active ingredient and meets the definition of a commercial chemical product. The methylene chloride is also an ingredient in the lab standard; however, the methylene chloride is not the sole active ingredient. The methylene chloride functions only as a carrier for the aldrin. Therefore, in this specific case, the methylene chloride would not meet the definition of a commercial chemical product, i.e., the methylene chloride is not the pure chemical, a technical grade of the chemical or the sole active ingredient.

Then per WAC 173-303-081 [*40 CFR 261.33(a)*], "Discarded chemical products", a waste will be designated as a "U" or "P" listed dangerous waste if the commercial chemical product or manufacturing chemical intermediate has the generic name listed in the discarded chemical products list, WAC 173-303-9903 [*40 CFR 261.33(e) and (f)*]. A review of WAC 173-303-9903 confirms that "Aldrin" is listed as P004 hazardous waste. Since the customer's aldrin is a commercial chemical product as a result of being a sole active ingredient, the P004 listing applies. "Methylene chloride" is also listed as U080 hazardous waste, however, since the customer's methylene chloride does not meet the definition of a commercial chemical product and was used as a carrier for the sole active ingredient aldrin, the U080 listing for methylene chloride cannot apply.

Therefore this unused lab standard consisting of aldrin and methylene chloride is a P004 hazardous waste.

SUMMARY:

- A commercial chemical product consists of commercially pure, or technical grade chemical, or formulations of the chemical in which the chemical is the sole active ingredient.
- Commercial chemical products are "U" or "P" listed if listed by generic name at 173-303-9903.
- In this specific scenario, aldrin is a P004 listed hazardous waste since it was a commercial chemical product (sole active ingredient) and listed in the discarded chemical list.
- Methylene chloride is not a U080 listed hazardous waste since it did not meet the definition of a commercial chemical product.

An EPA memo dated June 14, 1990, (RO 11523) further clarifying applicability of "U" and "P" listings to lab standards is attached. If you have any questions, please contact me at Paul_W_Martin@rl.gov or at (509) 376-6620.

TWO MINUTE TRAINING - ATTACHMENT

SUBJECT: Laboratory Standards and Applicability of the "U" or "P" Hazardous Waste Listings

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

June 14, 1990

MEMORANDUM

SUBJECT: RCRA Waste Classification of Laboratory Standards

FROM: David Bussard, Director
Characterization and Assessment Division (OS-330)

TO: Howard Wilson, Manager
Environmental Compliance Program
Environmental Health and Safety Division (PM-273)

This is in response to your memorandum of March 1, 1990, in which you requested that we provide clarification for the classification of wastes generated in laboratories. Specifically, you presented examples relevant to the preparation of laboratory standards using substances regulated under 40 CFR 261.33(e) and (f) (the P and U lists).

1) QUESTION: In the preparation of performance evaluation (PE) samples containing P or U-listed chemicals, an aliquot of the sample is taken and diluted 100 - 1000 fold to a final volume of one liter of water or solvent before analysis. The first question related to this scenario is whether the PE sample is a commercial chemical product (CCP) or is eligible for exclusion as a sample. Second, if the PE sample is indeed considered a commercial chemical product, you inquired whether the dilution of the PE sample before analysis is considered "use."

For example, organic semi-volatile PE samples to be analyzed for SDWA and NPDES certification will contain toxaphene (P123). Would the disposal of excess analytical solution be considered P123, D015 (if over 0.5 mg/L),D002 (if pH < 2), or a combination of the above?

ANSWER: Such samples are regulated as commercial chemical products provided that they have only one active ingredient. In the example you provided, the formulation consists of water plus the CCP as the sole active ingredient and, therefore, the excess analytical solution is correctly classified as EPA Hazardous Waste No. P123.

(2) QUESTION: In the preparation of laboratory standards, P and U-listed chemicals are mixed with water, acids, bases, or solvents. The resulting standard solution are disposed of when there is an excess, when they have exceeded their shelf life, or when they have been contaminated (not through use). The disposal of these waste standard solutions bring about several waste classification questions.

2A) QUESTION: Are these waste standard solutions P or U-listed wastes in cases in which the P/U listed solute is dissolved in water, acidic/basic solutions, organic solvents, or homogeneously mixed in an inert medium such as soil?

ANSWER: The answer in all these situations is "yes." Dissolving or diluting these chemical products to make laboratory standards (in lieu of buying such solutions) does not constitute use of these chemicals. The Federal Register notice which describes the sole active ingredient rule (§261.33 (d)) refers to the fact that many of the compounds listed under §261.33 (e) and (f) are frequently dissolved in solvents, preservatives, and the like, but this fact does not detract from the material's meeting the listing description (see 45 FR 78529, November 25, 1980). Assuming that there is a sole active ingredient (or, in this case, analyte), the mixtures you describe in your question meet the listing description in 40 CFR 261.33 even if the solvent (s) used are also listed in §261.33.

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2B) QUESTION: If in the preparation of standards an acid or base is used as the solvent for a P or U-listed chemical and the final solution is corrosive, is the solution, upon disposal, D002 or D004 - D017 if it exceeds the EP Toxicity criteria, or a P/U-listed waste? For example, the atomic absorption analysis of arsenic requires the preparation of a standard with arsenic trioxide. Specifically, 1.32 g of As2O3 (P012)analytical reagent grade) is dissolved in one liter of distilled water, and several milliliters of concentrated nitric acid are added for preservation. Would the correct waste classification be P012, D004, or D002 (if pH < 2) or a combination thereof?

ANSWER: This situation is similar to the previous question. The solution you describe definitely meets the listing description for P012. Even if the waste is classified as a listed waste, waste generators should furnish information regarding whether the waste also exhibits any hazardous waste characteristics. There are several reasons for this: 1) safety of personnel at these facilities; 2) There are restrictions in §5264 and 265 regarding various characteristic wastes (e.g., reactivity and ignitability) in landfills or surface impoundments; and 3) The Land Disposal Restrictions program requires such knowledge to comply with Part 268 standards. (See 55 FR 22520 - 22720, June 1, 1990.) Although Federal law does not require that all applicable waste codes be placed on the hazardous waste manifests, Land Disposal Restrictions regulations will require that all waste codes be reported for the purposes of meeting LDR provisions. (See 40 CFR 268.7.) In addition, many state agencies may have more stringent rules concerning proper manifesting of wastes in which listing and characteristic waste codes apply.

2C) QUESTION: In the preparation of quality control solutions, commercial chemical products (either in a liquid or solid form) are dissolved in an organic solvent. Because the organic solvent is used for its solvent properties (i.e., to solubilize mobilize, or dissolve other chemical substances), any excess or expired solutions should be disposed with the spent solvent hazardous waste identification number. Is this correct?

For example, if a solution of 0.01 g aldrin (P004) and 0.01 g dieldrin (P037) dissolved in 100 mL of methanol is to be disposed of would the waste be classified as F003 and P037 and P004? The methanol, in this case, is used to solubilize the pesticide constituents, and the waste, therefore, meets the spent solvent listing.

ANSWER: The above statements are not correct. The answer to these questions is just like the answer to question 2A. Assuming that there is only one active ingredient (i.e., analyte or solute), the excess or expired solutions should be given the applicable commercial chemical product hazardous waste identification number under §261.33 no matter how many solvents are used (even if the solvents themselves are listed in §261.33). In the above example, more than one active ingredient exists, therefore the solution does not meet any listing description at this time. Additionally, when a solvent is used to formulate a compound or product (such a CCP), neither the solvent nor the formulated product meets the listing description for spent solvents. (See 50 FR 53315, December 31, 1985.) The disposed solution would have to be tested for hazardous waste characteristics, and would probably fail the ignitability (D001) characteristic.

3) QUESTION: Laboratories prepare many reagents with P and U-listed chemicals. During the analysis of polychlorinated dibenzo-p-dioxins and dibenzofurans, a reagent containing methylene chloride/methanol/benzene (75:20:5) is used. Upon disposal of excess reagent, would the mixture be identified as U080 (methylene chloride/CCP), U154 (methanol/CCP), U019 (benzene/CCP), F002 (methylene chloride/solvent), F003 (methanol/solvent), or F005 (benzene/solvent)?

ANSWER: None of the above. If any one P or U-listed chemical is dissolved in this reagent for the purpose of analysis, the discarded unused reagent would carry the waste code of that particular solute. (See answers to 2A and 2C.) From the description of the reagent you provided above, the unused reagent would be hazardous only if it exhibits a hazardous characteristic. This particular reagent would probably exhibit the characteristic of ignitability (D001). Please note that this waste also would be EP toxic for benzene when the newly promulgated organic Toxicity Characteristic becomes effective in September, 1990.

Thank you for your inquiry. If you have any further questions, please contact Ron Josephson of my staff at 475-6715.

cc: Waste Management Division Directors, Regions I - X Susan Bromm, OWPE (OS-520) FaxBack # 11523