TWO MINUTE TRAINING

TO: *CH2M HILL PLATEAU REMEDIATION COMPANY*

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

SUBJECT: *F001 - F005 LISTED HAZARDOUS WASTE AND THE 10% RULE*

DATE: *JUNE 18, 2015*

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TWO MINUTE TRAINING

SUBJECT: F001 - F005 Listed Hazardous Waste and the 10% Rule

Q: A customer has a waste stream that consists of toluene and methylene chloride. The waste was used as a solvent and contained, before use, 5% Toluene, 5% Methylene chloride and 90% mineral spirits. Due to the presence of mineral spirits the waste is ignitable and designates for the characteristic waste code D001. Due to the presence toluene and methylene chloride, do any F-listed waste codes also apply?

A: WAC 173-303-9904 (*40 CFR 261.31*) defines toluene as an F005 listed hazardous waste if the spent solvent mixture contains, before use, a total of 10% or more of one or more of the F005 constituents (i.e., toluene, methyl ethyl ketone, benzene, etc.) or those constituents listed in F001, F002, or F004. Methylene chloride is an F002 listed hazardous waste if the spent solvent mixture contains, before use, a total of 10% or more of one or more of the F002 constituents (i.e., methylene chloride, 1,1,1- trichloroethane, etc.) or those constituents listed in F001, F004, or F005.

The 10% rule has always provided ample confusion especially due to the references to other F-listings within each specific F-listing. F005 also refers to F001, F002 and F004; and F002 also refers to F001, F004 and F005. The key to determining F-listing applicability is to understand that the 10% rule is additive across the multiple F-listings. The customer's waste had, before use, 5% toluene (an F005 constituent) and 5% methylene chloride (an F002 constituent) giving a total amount of 10% of these multiple F-listed constituents. Since the customer's waste contained, before use, 10% or more of one or more F005 constituents (toluene) **or** those constituents listed in F001, F002, or F004 (the methylene chloride), both the F005 and F002 listings apply.

The intent behind the 10% rule was to regulate as much of the solvent universe as possible as listed hazardous waste. Prior to the 10% rule, mixtures of solvents generically known as "lacquer thinners" might not have met any F-listings. Now, if a mixture has a total of 10% or more of applicable F-listed constituents the solvent mixture is regulated as an F-listed hazardous waste.

Note that the 10% rule refers to percentages "before use" and not to percentages after use when the material is considered waste. This is one of the rare occurrences when RCRA regulates a material based upon its product composition as opposed to its waste composition. And remember that the 10% rule in reference to F003 is slightly different and was addressed in last week's 2MT.

SUMMARY:

- The 10% rule is additive for all applicable F-listed constituents in mixtures.
- The 10% rule was intended to regulate as much of the solvent universe as possible.
- The 10% rule applies "before use".

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Excerpts from WAC 173-303-9904 defining F002 and F005, and a table of examples are attached to the e-mail. If you have any questions, please contact me at Paul_W_Martin@rl.gov" or at (509) 376-6620.

TWO MINUTE TRAINING - ATTACHMENT

SUBJECT: F001 - F005 Listed Hazardous Waste and the 10% Rule

WAC 173-303-9904 Dangerous waste sources list.

The following Hazard Codes are used to indicate the basis EPA used for listing the classes or types of wastes listed in this section:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
Toxicity Characteristic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

DANGEROUS WASTE SOURCES LIST

Dangerous Waste No.	Sources

Nonspecific Sources

F001 The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. (T)

F002 The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane and 1,1,2 trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. (T)

F003 The following spent nonhalogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent nonhalogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above nonhalogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. (I)

F004 The following spent nonhalogenated solvents: Cresols and cresylic acid, nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. (T)

F005 The following spent nonhalogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. (I,T)

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EXAMPLES

EXAMPLE	WASTE SOLVENT CONSTITUENTS AND % "BEFORE USE"	POTENTIAL WASTE CODE LISTING or CHARCTERISTIC	F-LIST % TOTALS	DESIGNATED F CODES
1	10% MEK 90% MINERAL SPIRITS	F005 D001	10%	F005
2	90% BENZENE 10% DIESEL	F005 D001	90%	F005
3	100% METHYLENE CHLORIDE	F002	100%	F002
4	10% TETRACHLOROETHYLENE (DEGREASER) 90% MINERAL SPIRITS	F001 D001	11%	F001
5	4% MEK 5% TETRACHLOROETHYLENE (DEGREASER) 91% MINERAL SPIRITS	F005 F001 D001	9%	N/A*
6	11% TOLUENE 1% METHYLENE CHLORIDE 88% TURPENTINE	F005 F002 D001	12%	F002 / F005
7	40% METHYLENE CHLORIDE 9% CRESYLIC ACID 51% TOLUENE	F002 F004 F005	100%	F002 / F004 / F005
8	1% CARBON TETRACHLORIDE (DEGREASER) 8% METHYLENE CHLORIDE 1% CRESOLS 1% CARBON DISULFIDE 89% DIESEL	F001 F002 F004 F005 D001	11%	F001 / F002 / F004 / F005
9	1% CARBON TETRACHLORIDE (DEGREASER) 1% CRESOLS 1% CARBON DISULFIDE 97% DIESEL	F001 F004 F005 D001	3%	N/A*

* Characteristic codes may apply but will not be identified in this table.