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JAN 19 1990

RECEIVED JAN 26 1990 CORRESPONDENCE CONTROL

Mr. Hugh O'Neill
Regulation Development Coordinator
State of Washington
Department of Ecology
Mail Stop PV-11
Olympia, Washington 98504

Dear Mr. O'Neill:

WASHINGTON STATE DANGEROUS WASTE DESIGNATION ISSUES

Westinghouse Hanford company (WHC) and the U. S. Department of Energy, Richland Operations Office (DOE-RL) have compiled several issues involving waste designation for the proposed amendments to Washington State's Dangerous Waste Regulations. The attachment to this letter presents a discussion of these issues. Clarification is also requested from the Washington State Department of Ecology (Ecology) concerning these issues. These issues are generic in nature rather than being specific to the Hanford Site. For this reason, the WHC and DOE-RL believe that Ecology may wish to present guidance on these issues, either through amendment of the Washington Administrative Code (WAC) 173-303, or another form which is appropriate for distribution to other members of the regulated community within the State.

Kindly consider the attached issues at your earliest possible convenience. The DOE-RL and WHC will be contacting you soon for the purpose of scheduling a meeting to discuss these issues.

Please contact Mr. A. J. Knepp on (509) 376-1471 if you have any questions on this request.

Sincerely,

R. D. Izatt, Director
Environmental Restoration Division
Richland Operations Office

R E Lerch

R. E. Lerch, Manager
Environmental Division
Westinghouse Hanford Company

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Attachment:
Waste Designation Issues

cc w/att:
[redacted]
R. F. Stanley, Ecology

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Subject
WASHINGTON STATE DANGEROUS WASTE DESIGNATION ISSUES

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WASTE DESIGNATION ISSUES

I. Toxic dangerous wastes (Washington Administrative Code [WAC] 173-303-084(5); WAC 173-303-101)

A. Use of "undesignated" area of toxic mixtures graph

Issue: The toxic dangerous wastes mixtures graph in Washington Administrative Code [WAC] 173-303-9906 shows a large "undesignated" area. Although mixtures falling in this area may be undesignated for small quantity generators, WAC 173-303-070(7)(b) and (8) indicates that such wastes would be designated if the aggregate quantity of all waste generated at a facility exceeds the quantity exclusion limit. Thus, the "undesignated" area does not exist for anyone other than small quantity generators. Since the chart shows both an Extremely Hazardous Waste (EHW) and a Dangerous Waste (DW) category for wastes with an equivalent concentration (EC) exceeding 0.01 percent, it is unclear how such wastes should be designated.

Suggested resolution: Relabel the "undesignated" area of the chart to indicate that wastes in this area are considered "DW" for generators other than small quantity generators. An alternative resolution would be to split the undesignated area into DW and EHW areas depending upon the EC. For example, any waste with an EC exceeding 1 percent could be designated as EHW.

B. Aggregation of wastes with equivalent concentrations exceeding 0.01 percent

Issue: Wastes with an EC exceeding 0.01 percent are designated either as "DW" or "EHW" via the toxic dangerous waste mixtures graph in WAC 173-303-9906, depending upon the monthly or batch quantity involved. It is unclear as to how the waste aggregation requirements in WAC 173-303-070(7)(b) are to be used for these wastes. For example, consider a waste with an EC of 0.1 percent which is generated in quantities of 350 pounds per batch at the rate of two batches a month. If each batch is evaluated separately, a DW designation is reached. If the quantities of the two batches are aggregated, an EHW designation results. A more confusing situation presents itself when unlike waste streams are generated. For example, consider two waste streams with ECs of 0.05 and 0.1 generated in quantities of 400 and 350 pounds per month, respectively. If evaluated separately, these wastes are designated DW. If aggregated, the wastes are designated EHW.

Suggested resolution: Waste should be evaluated on a per batch generation quantity, and designated accordingly. An alternative would be to require that wastes with the same EC be aggregated on the basis of the total monthly generation rate.

This latter proposal may create compliance problems, however, since the monthly generation rate may not always be predictable at the beginning of the month and a batch of waste generated early in the month may have been designated as DW and shipped for off-site treatment or disposal prior to generation of a second waste with the same EC in a quantity which, if aggregated with the first waste quantity, would result in an EHW designation. It seems inappropriate to consider the first waste to have been incorrectly designated, especially if generation of the second batch of waste was not anticipated. An alternative which would eliminate this potential problem would be to require that wastes be designated DW until the monthly aggregate quantity exceeds the point where EHW designation would occur. Waste generated subsequent to this time with the same EC would be designated EHW, but the DW designation for previously generated wastes would remain valid. Implementation of this alternative seems somewhat cumbersome. Finally, it would be possible to draw the DW/EHW designation line straight down at an EC of 0.01. This would eliminate the problem of having a potential overlap of designations, but may well result in regulation of a wider range of waste as EHW than appropriate.

In the case of waste streams with differing ECs, aggregation of the quantities should not be done. This recommendation appears to correspond with previous guidance from Ecology (see TIM #85-3). Ecology may want to consider, however, whether or not wastes with similar ECs need to be aggregated. For example, is a waste with an EC of 0.050 sufficiently different from a waste with an EC of 0.051? If so, each batch of waste can probably be legitimately evaluated separately for toxicity since it is highly likely that ECs will vary at least a little between batches, even for wastes generated from a tightly controlled process.

C. **Use of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Spill Table toxic categories**

1. **Differing Toxic category ranges**

Issue: The ranges specified in the "Toxic Category Table" in WAC 173-303-084(5)(a) and -101(2) for defining toxic X, A, B, C, and D materials does not match with the category definitions utilized in determining toxic categories for the CERCLA Spill Table. For example, an oral rat Lethal Dose $(LD)_{50}$ range of 500 - 5000 milligram per kilogram (mg/kg) results in a toxic "D" categorization via WAC 173-303. The CERCLA Spill Table range for a toxic "D" categorization, however, is 100 - 500 mg/kg. Thus, the upper limit for a CERCLA category "D" material is within the "C" range based upon the WAC 173-303 tables, whereas the lower end of the CERCLA category is a factor of 10 higher than the lower end for the WAC 173-303 category "D" range. Reliance on the CERCLA Spill Table rather than the National Institute for Occupational Safety and Health (NIOSH) Registry for determining toxic categories could easily result in incorrect designation of a waste. If the most stringent categorization must be used, there is no need to refer to the CERCLA Spill Table since the NIOSH data will always need to be consulted for comparison with the WAC 173-303 toxicity ranges.

Suggested resolution: Consider changing the toxic category ranges in WAC 173-303 to correspond with the CERCLA ranges. This would make use of the Spill Table valid. The obvious problem with this suggestion is, of course, that constituents currently regulated by the WAC 173-303 would become non-regulated. In some cases, this may be inappropriate. For example, ethylene glycol would no longer be regulated. On the other hand, in some instances it may be appropriate to change the WAC 173-303 ranges to eliminate some common and fairly innocuous materials (e.g., table salt) that are currently regulated. It may be beneficial for Ecology to undertake a technical review to determine the appropriateness of the toxicity ranges currently established in WAC 173-303. If a decision is made to keep the existing ranges, WAC 173-303 should be revised to eliminate use of the CERCLA Spill Table for determining toxicity.

2. **The CERCLA categories based upon non-toxic criteria**

   Issue: As mentioned in the previous item, WAC 173-303-084(5)(5)(a) and -101(2) specify the CERCLA Spill Table as a reference for determining toxic categories for constituents in a waste. In actuality, the Spill Table categories may be a reflection of hazards other than toxicity. Examples of non-toxic hazards which could result in assignment of a Spill Table category include ignitability and reactivity. The presumption that the Spill Table category always reflects toxicity is incorrect.

   Suggested resolution: Consider either eliminating the Spill Table as a resource for toxicity data or revise WAC 173-303 to state that a generator is not required to use the Spill Table category in toxicity designations if he determines that the category assignment is not based upon toxicity.

3. **Use of CERCLA categories based upon chronic toxicity**

   Issue: Toxicity designation per WAC 173-303-084(5) implies that acute toxicity is the determining parameter since the only data from the NIOSH Registry used in such designation are acute toxicity values. In many instances, the CERCLA Spill Table assigns a hazard category based upon an evaluation of chronic, rather than acute, toxic effects. Use of Spill Table categories based upon chronic toxicity data for WAC 173-303-084(5) designations seems inconsistent if the intent is to evaluate acute toxicity.

   Suggested resolution: Clarify that the CERCLA Spill Table data need not be used for toxicity designations if the generator determines that the category assignment is based upon chronic, rather than acute, toxicity.

4. **Use of CERCLA categories which are dependant upon particle size**

   Issue: For several metals in the CERCLA Spill Table, the hazard category assignment is applicable only for a certain particle size range. For example, copper is shown as a category D material if the diameter of the pieces of solid metal released is less than 100 micrometers. It is uncertain how this particle size range should be factored into toxicity designation calculations.

Suggested resolution: In many cases, the assignment of metal hazard categories in the CERCLA Spill Table are not based upon toxicity.

Thus, the problem of how to use particle size range becomes moot in these situations if it is decided that hazard categories based upon non-toxic effects need not be used (see item I.C.2). In order to clarify this issue, however, it is recommended that the CERCLA Spill Table hazard categories for metals not be used for waste toxicity designations in any event if the particle size range in the waste is greater than that specified in the Spill Table. The National Institute for Occupational Safety and Health (NIOSH) Registry toxicity data should be used in waste designations, however, regardless of particle size.

5. Updating of discarded chemicals lists

Issue: The "reason for designation" column in the discarded chemical products list (WAC 173-303-9903) assigns toxic categories based upon the CERCLA Spill Table. As noted previously, the Spill Table categories do not always reflect toxicity. In addition, the current designations in WAC 173-303-9903 do not reflect the latest Spill Table designations.

Suggested resolution: Either update the "reason for designation" column to reflect the latest Spill Table assignments and reasons (i.e., don't show toxic categories for Spill Table assignments based upon non-toxic hazards) or eliminate the toxic information from the "reason for designation" column.

D. Reference source for aquatic toxicity data

Issue: The WAC 173-303-084(5)(a) and -101(2) continues to require the use of aquatic toxicity data in waste designations. Unfortunately, the NIOSH Registry no longer includes this information, and an alternative reference source is not provided.

Suggested resolution: Provide a citation for a reference source which lists aquatic toxicity data.

E. **Use of NIOSH Registry inhalation toxicity data**

Issue: The definition of "inhalation LC_{50}" in WAC 173-303-040(45) indicates that only data based upon a 4-hour test time is pertinent to toxicity designations. In many cases, the NIOSH Registry data is based upon tests of longer or shorter duration. In other instances, the NIOSH Registry data does not indicate the test duration. It is unclear how such data is to be used in making waste designations.

Suggested resolution: Since the 4-hour test is specified by WAC 173-303-040(45), only NIOSH Registry data of this duration should be used. An exception to this rule may be appropriate in cases where a shorter duration test shows a substance to be toxic based upon the ranges shown in the Toxic Category Table of WAC 173-303-084(5). It is uncertain, however, how data from such shorter duration tests would be extrapolated to predict the results of a 4-hour test. In such instances, it is recommended that the same range presented for the 4-hour test be used to assign a toxic category for inhalation data from shorter duration tests. In the case of NIOSH Registry data with no known test duration, it is recommended that such data not be used in designating a waste for toxicity. As an alternative, Ecology might want to consider identifying a reference source where inhalation data of appropriate duration may be found, if such a reference exists.

F. **Toxic category assignments for various ions in solution**

Issue: Toxic compounds in aqueous waste streams are often present as ions in solution rather than as compounds per se. For example, copper sulfate would exist in an aqueous waste as copper ions and sulfate ions. It seems highly unlikely that Ecology intended to exempt these solutions from designation as toxic mixtures solely on the basis that the ionic species, rather than the compound, are present; after all, the aquatic toxicity data generated for such compounds is based upon tests of these compounds dissolved (ionized) in water. In the case of a single ionized compound such as copper sulfate, it is a simple matter to evaluate toxicity based upon copper sulfate data. Often times, however, analyses of waste streams show a multitude of cations and anions in solution. In such instances, it is unclear which parent compound should be used to assign toxicity. For example, consider a solution which contains copper, nitrate, chloride, and sodium ions.

Copper chloride is a toxic "A" material, and the solution would probably mimic this compound with regards to toxicity towards an aquatic species, even though the original solution may have been made by adding copper nitrate (a toxic "B" material) and sodium chloride (a toxic "D" material) to water. The problem of assigning toxic categories based upon parent compounds quickly becomes complicated when additional ions are present, a common situation for a great number of waste streams.
Suggested resolution: It may be appropriate to designate multi-ionic solutions based upon the most toxic parent compound that can be formed for each species until the concentration of the limiting ion is completely accounted for, in which case the next most toxic ionic combinations would be used. For example, in a solution with copper, nitrate, chloride, and sodium ions, copper chloride is the most toxic compound. If chloride is the limiting ion, all chloride present would be evaluated as copper chloride. The excess copper ion (i.e., that quantity not evaluated as copper chloride) would be evaluated as copper nitrate, and finally the remainder of the ionic species would be evaluated as sodium chloride. Another option would be to assign of parent compounds based upon most prevalent ionic species. For example, if nitrate represents 90 percent of the anion species present, then all cations would be evaluated as nitrate compounds (e.g., copper nitrate, sodium nitrate, etc.). Hisoption may be more convenient, but could result in an underestimation of toxicity in some instances. A third option would be to allow the generator to determine what he considers the most likely parent compound, and designate accordingly. This option may be unduly burdensome given the number of generators who may not have a sufficient understanding of chemistry to make such an evaluation. Another option would be to not assign toxicity on multi-ionic solutions based upon the complexity of the situation, unless Ecology directs criteria testing pursuant to the authority established in WAC 173-303-070(4). This option would result in many wastes being undesignated for toxicity, even though chemical characterization is present, simply because Ecology will not be in a position to know of and require criteria testing for all waste streams of potential concern. On the other hand, either of the first three options may be unduly burdensome.

G. Discrepancies between WAC 173-303-101 and bioassay test methods

Issue: Per WAC 173-303-101(5), wastes are designated "DW" for toxicity if the bioassay tests show that the toxic range is "D" or if the toxic range is "X, A, B, or C" and the quantity generated is less than 220 pounds per month or per batch. Wastes with the latter toxic range generated in quantities exceeding 220 pounds per month or per batch are designated "EHW." The problem with this section is that the current bioassay tests (see DOE 80-12) do not result in the assignment of categories "D" or "X, A, B, or C." Instead, the tests deem a waste as "DW" or "EHW."

This designation is arrived at from the tests alone -- it has nothing to due with the quantities generated per month or per batch, as WAC 173-303-101(5) would indicate to be the case.

Suggested resolution: It appears that the intent of WAC 173-303-101(5) was to designate a waste based upon generation rate, not just toxicity alone. To accommodate this position, the bioassay test should be revised to result in the assignment of toxic categories (either "D" or "X, A, B, or C") rather than "DW" or "EHW." Possibly those wastes which the bioassay tests currently deem "EHW" should be placed in the "X, A, B, or C" toxic category, and those deemed "DW" in the toxic "D" category. On the other hand, it may be better to specify ranges for each of the categories. By taking this approach, it would be possible to avoid designation of all category "C" wastes as "EHW" when the generation rate is greater than 220 pounds per month or per batch.

II. Persistent dangerous wastes (WAC 173-303-084(6); WAC 173-303-102)

A. Definition of specific halogenated hydrocarbons of concern

Issue: The definition of halogenated hydrocarbons in WAC 173-303-040(37) relies upon a test method to determine which constituents are regulated due to persistence. It would greatly simplify designation efforts if a specific list of halogenated hydrocarbons were provided.

Suggested resolution: Consider redefining the term "halogenated hydrocarbons" to identify specific constituents of concern. This might be accomplished by defining halogenated hydrocarbons to be those constituents shown in the "halogenated organic compounds" list of 40 Code of Federal Regulations (CFR) 268 Appendix III.

B. Adequacy of current test method

1. Use of Parr bomb test for determining halogen content

Issue: The persistence test specified in WAC 173-303-110(3)(a) allows the use of either a Parr bomb test or gas chromatograph analyses to determine halogen content. The results obtained from these two methods may be very different since the Parr bomb test results will indicate only the concentration of the halide ion, whereas the gas chromatograph results will identify the concentrations of the specific compounds present.

Thus, a Parr bomb test may show a chloride ion content of 80 parts per million (ppm), which is below the 100 ppm designation limit. If the source of the chloride ion is chloroethane, for example, the gas chromatograph results would show the presence of the actual halogenated hydrocarbon compound at a concentration of 145 ppm. It seems inappropriate that a generator should be "penalized" by having to regulate a waste solely because he used a more precise analytical method.

Suggested resolution: Base the 100 ppm designation limit for halogenated hydrocarbons on the total halide ion content, rather than on the compound itself.

2. Loss of volatile halogens during evaporation process

Issue: The persistence test specified in WAC 173-303-110(3)(a) calls for an evaporation step. If the residue from this step exceeds 0.01 percent, further analysis for halogenated hydrocarbon content is required. The evaporation step, however, could result in the loss of much or all of any volatile halogenated hydrocarbons present in the waste. Thus, a generator may be evaporating the constituent of concern in the analysis.

Suggested resolution: Ecology should consider reviewing this issue to determine if the original intent of the persistence criteria was to designate only for non-volatile halogenated hydrocarbons (this seems unlikely based upon the example presented in WAC 173-303-084(6)(a)). If this was not the intent, Ecology should consider revising the designation test to ensure that volatile halogenated hydrocarbons are not lost via evaporation during the analysis procedures.

C. **Use of "undesignated" area of persistent dangerous waste mixtures graph**

Issue: The persistent dangerous wastes mixtures graph in WAC 173-303-9907 shows an "undesignated" area. Although mixtures falling in this area may be undesignated for small quantity generators, WAC 173-303-070(7)(b) and (8) indicate that such wastes would be designated if the aggregate quantity of all waste generated exceeds a quantity exclusion limit. Thus, the "undesignated" area does not exist for anyone other than small quantity generators.

Suggested resolution: Relabel the "undesignated" area of the chart to indicate that wastes in the area above 0.01 percent are "DW" (and "EHW" for wastes in the area above 1.0 percent) for generators other than small quantity generators.

III. **Carcinogenic dangerous wastes (WAC 173-303-084(7); WAC 173-303-103)**

A. **Discrepancies between sections**

Issue: According to WAC 173-303-084(7), a waste would be undesignated if the total carcinogen content is less than 1 percent. The WAC 173-303-103, however, indicates that a waste would be regulated as carcinogenic if the concentration of any one positive carcinogen exceeds 0.01 percent. Also, whereas there is no EHW category for carcinogens in WAC 173-303-084(7), WAC 173-303-103 requires such a designation for wastes which contain greater than 1 percent of a positive carcinogen. The discrepancies between these sections may be intentional, based upon an Ecology "Responsiveness Summary" issued in June of 1986. The language in WAC 173-303-070(5) could be interpreted, however, as requiring that the more stringent criteria of WAC 173-303-103 be used. This would result in the use of WAC 173-303-103 in all cases since the knowledge necessary for designating per WAC 173-303-084 would be exactly the same as that used in WAC 173-303-103. The designation limits in WAC 173-303-084 should be identical to those in WAC 173-303-103 if the "special knowledge" clause in WAC 173-303-070(5) is interpreted in this manner.

Suggested resolution: Ecology should review this issue and determine whether the "special knowledge" clause was meant to invoke designation per WAC 173-303-103 in all instances, or whether a generator can use WAC 173-303-084(7) (even with the knowledge that the WAC 173-303-103 designations would be at least as stringent, and often more stringent) unless Ecology

specifically directs designation per WAC 173-303-103. This latter option seems to correspond better with the apparent initial intention; otherwise, there would be no reason for the two sections to differ. If Ecology decides that the WAC 173-303-103 process should be used based upon the "special knowledge" clause, the designation limits in WAC 173-303-084(7) should be changed to correspond with those shown in WAC 173-303-103. It should be recognized, however, that such a change may have major ramifications on the used oil recycling effort. This is because many oils contain greater than 1 percent benzene, an International Agency for Research on Cancer (IARC) positive carcinogen. Application of WAC 173-303-103 would result in an EHW designation for these oils.

This would preclude burning these wastes as used oil for energy recovery since WAC 173-303-515(1)(b) prohibits this option for wastes designated EHW. Instead, these wastes would be subject to the more stringent requirements applicable to dangerous wastes burned for energy recovery (WAC 173-303-510). This does not appear to be a very desirable option since it would impact a large volume of waste which is currently being beneficially and safely recycled by burning for energy recovery.

B. Current IARC terminology

Issue: The verbiage in WAC 173-303-084(7), WAC 173-303-103, and other WAC 173-303 sections refers to IARC "positive" or "suspected" carcinogens. The IARC no longer uses these terms; instead, the terms "sufficient" or "limited" are used with regards to whether the data shows that a material is carcinogenic.

Suggested resolution: Revise WAC 173-303 to reflect the current IARC terminology.

C. Use of IARC studies on matrices versus individual components

Issue: The requirements in WAC 173-303-084(7) and WAC 173-303-103 require dangerous waste designation for wastes containing positive carcinogens in concentrations exceeding 1 percent or 0.01 percent, respectively. In some cases, the IARC has done reviews of a matrix in addition to individual constituents. For example, the IARC may determine that there is no evidence for the carcinogenicity of a matrix such as certain types of oils. These same oils may, however, contain a known carcinogenic constituent (such as benzene) in concentrations exceeding 1 percent or 0.01 percent.

If viewed in terms of WAC 173-303, the wastes would be designated as carcinogenic, even though the IARC has concluded that there is no evidence of carcinogenicity in the matrix. This appears contrary to the intent of designating a waste for carcinogenicity.

Suggested resolution: If IARC data on a matrix determines that there is no evidence of carcinogenicity, the matrix should not be designated as such, even if a known carcinogen is present above the 1 percent or 0.01 percent limit. If there is inadequate data to determine whether the matrix is carcinogenic, then it may be appropriate to take a conservative approach and assume that the matrix is carcinogenic if it contains a known carcinogen at the 1 percent (or 0.01 percent) concentration limit.

IV. Dangerous waste sources (WAC 173-303-082)

A. Scope of spent solvent listing

Issue: The WAC 173-303-082(4) states that "any dangerous waste source listed in WAC 173-303-9904 which lists more than one chemical compound must be designated as a dangerous waste if it contains any one or any combination of the listed chemical compounds." In contrast, the regulations in 40 CFR 261 regulate solvents on the dangerous waste sources list only if the mixtures contain, prior to use, a total of 10 percent or more of specified halogenated solvents identified with waste codes F001, F002, F004, and F005. The discrepancy between the two regulations causes problems with regards to the EPA Land Disposal Restrictions in 40 CFR 268. This occurs in instances where the EPA code would not assign the spent solvent code to a waste (e.g., in cases where the solvent contains less than 10 percent of a listed solvent prior to use), but the waste is designated with the code due to the requirements of WAC 173-303-082(4). In essence, this results in a "state-only" F-listed waste. This is confusing because the EPA has established Land Disposal Restrictions for solvent wastes identified with F001 - F005 waste codes, but the EPA definition for these wastes does not encompass the same scope as WAC 173-303. Presumably, the EPA Land Disposal Restrictions would apply only to the EPA realm of F-listed wastes, and not to the "state-only" F-listed wastes, but since the codes are the same it is difficult to distinguish between the two.

A second problem arises in cases where a solvent contains another solvent as a trace contaminant or impurity. It seems unlikely that Ecology intended to regulate these types of mixtures under the additional waste codes.

For example, carbon tetrachloride (a solvent designated with the F001 waste code if used in degreasing) may contain trace impurities of methylene chloride (waste code F001 if used in degreasing, waste code F002 if used in other solvent applications). If the carbon tetrachloride in question is not used in a degreasing application, but for some other solvent use, the F001 code would not apply. Since the material contains trace impurities of F002 solvent, however, the language of WAC 173-303-082 could be interpreted as stating that a F002 code should be assigned to the waste. This seems inappropriate in cases where the waste contains listed solvents which are not intentionally added to the formulation for solvent purposes, but rather are present only as trace impurities in the substance.

Suggested resolution: Review the scope of the Ecology F-listed waste sources and determine whether regulation of a broader scope than intended by the EPA is appropriate. If not, change the language in WAC 173-303-082 and WAC 173-303-9904 to correspond with that used by the EPA.

If a determination is made that regulation of a broader scope of waste is appropriate, consider establishing a separate waste code for "state-only" wastes so that such wastes can be easily distinguished from the EPA F-listed wastes which are subject to the land ban requirements. Additionally, it may be appropriate to limit the scope of the "state-only" F-listed wastes to provide a lower limit (e.g., exclude mixtures which contain a total of 1 percent or less of the listed solvents prior to use) for regulation.

Revision to WAC 173-303-082 may also be appropriate to avoid regulating wastes which contain a listed solvent only as a trace impurity in the mixture. This could also be accomplished by an interpretation that the language currently in WAC 173-303-082(4) is not intended to apply to situations where the listed solvent exists only as a trace impurity in another mixture.

B. Regulation of ignitable solvents

Issue: The EPA regulates spent solvents identified with the F003 code solely due to ignitability. Per 40 CFR 261.3(2)(iii), mixtures of these wastes with other solid wastes are not regulated if the mixture is no longer ignitable. The WAC 173-303, however, does not incorporate the 40 CFR 261.3 language. Instead, WAC 173-303-070(2)(a)(i)(B) indicates that such wastes must be exempted pursuant to WAC 173-303-910(3). The differences between the EPA and Ecology regulations result in a situation where wastes can be "state-only" F003 wastes. This results in confusion with regards to the EPA Land Disposal Restrictions applicable to F003 wastes. Presumably, the EPA Land Disposal Restrictions would only apply to wastes designated F003 by the EPA, and not to "state-only" F003 wastes.

Suggested resolution: Consider incorporating the 40 CFR 261.3(2)(iii) language into WAC 173-303. If Ecology wishes to regulate non-ignitable mixtures with F003 solvents as listed waste, provide a distinct waste code for such wastes. It should be recognized that a separate "state-only" listed waste code for these solvents may not be necessary, however, since many of the solvents which are considered only ignitable by the EPA would be regulated due to toxicity by the more stringent Ecology criteria established in WAC 173-303-084(5).

It may be appropriate to regulate such materials only under this section, rather than establish a separate listed waste code for "state-only" F003 solvents.

V. Dangerous waste characteristic of ignitability (WAC 173-303-090(5))

A. Ignitability designation for multi-phase wastes

Issue: The WAC 173-303-090(5)(a)(i) states that a waste exhibits the ignitability characteristic if it has a flash point of less than 140 degrees Fahrenheit. A question arises regarding how to designate multi-phase wastes for this characteristic. For example, it is fairly common for a primarily aqueous waste to have a thin layer of organic material on the surface. In determining if the waste is ignitable, should the organic phase be tested separately and, if the flash point of this phase is less than 140 degrees Fahrenheit, should the entire waste stream be designated as ignitable? Or should a sample of the two phases be shaken so that the organic portion is present as an emulsified phase prior to performing ignitability testing?

Suggested resolution: It seems unlikely that a thin film of ignitable waste on the surface of a non-ignitable phase should cause the entire waste to be designated since the hazard posed by in this situation is small. Possibly a designation limit could be established based upon the percentage of ignitable phase present.

For example, a waste containing less than 1 percent of an ignitable phase could be called non-ignitable, while wastes with a higher ignitable phase could be designated for this characteristic. Alternatively, any waste with an ignitable phase could be designated. This option would probably result in a broader range of wastes being regulated for this characteristic than initially intended. It is unknown what percentage of waste would be designated if emulsification of the phases is allowed prior to testing for determination of flash point. Perhaps data of this nature would help determine an appropriate ignitable phase percentage above which designation for the ignitability characteristic should occur.

B. Designation based upon DOT definition of oxidizer

Issue: The WAC 173-303-090(5)(iv) states that a waste is designated for ignitability if it is an oxidizer per the definition in 49 CFR 173.151. The Department of Transportation (DOT) definition states that a waste is an oxidizer if it is "a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter."

In the case of nitric acid, the Hazardous Materials Table in 49 CFR 172.101 indicates that solutions containing less than 40 percent acid are not classified as oxidizers. In the case of sodium nitrate, however, no lower limit is specified.

Some DOT personnel have indicated that, if no lower limit is specified, then the solution must be classified as an oxidizer regardless of concentration. This seems inappropriate since nitrate is a common component of many wastes - including most drinking water - at a very low concentration.

Suggested resolution: If possible, a designation concentration should be specified for each of the listed oxidizers (i.e., chlorate, permanganate, inorganic peroxide, or nitrate).

This could be based upon a determination of what concentration is needed for these substances to "yield oxygen readily to stimulate the combustion of organic matter." Without concentration values, it is unlikely that any consistency will be attained for designation based upon the DOT definition of oxidizer.

VI. Dangerous waste characteristic of corrosivity (WAC 173-303-090(6))

A. Designation based upon pH versus corrosion of steel

Issue: The corrosivity designation characteristic seems to require evaluation of two factors: the pH of the solution and the rate of corrosion of steel. It appears, however, that the normal practice for corrosivity designation is based solely upon pH; the steel corrosion test is rarely done.

Suggested resolution: Establish an Ecology position on the need to evaluate both pH and steel corrosivity. Potentially, it is reasonable to presume that if the pH limits are not exceeded, then the waste would not exceed the steel corrosivity limits. A significant increase in designation costs would occur if Ecology were to require evaluation of steel corrosion for every waste generated.

VII. Dangerous waste characteristic of reactivity (WAC 173-303-090(7)

A. Designation of cyanide and sulfide bearing waste streams

Issue: The WAC 173-303-090(7)(v) states that a waste is designated for reactivity if it is a "cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment." There is no indication of what concentration of cyanide or sulfide would cause this condition.

Suggested resolution: One option would be to provide a concentration limit for cyanides or sulfides in a waste which would cause reactivity designation.

Such concentration-based limits may, however, be difficult to determine since release of gas may be matrix dependant. Possibly, a test could be developed which would be based upon release of gas in specified concentrations or quantities. In any event, some guidance regarding designation via this criteria is warranted.

VIII. Special wastes

A. Waste oil designation (WAC 173-303-515)

Issue: The WAC 173-303-515(a)(i) states that the special requirements for used oil apply to oil which is designated due to exhibiting any characteristic of a dangerous waste.

The WAC 173-303-515(a)(ii) states that the requirements also apply to used oil that is designated "DW solely through WAC 173-303-084 or 173-303-101 through 173-303-103." The use of the word "solely" in this latter statement may be misleading because it could be interpreted as meaning that wastes designated DW by another section (such as the characteristics) could not qualify as used oil, since such oil is not designated "solely" by the sections specified, but by the characteristics as well. From the words in WAC 173-303-515(a)(i), it does not appear that the intent was to preclude characteristic and toxic wastes from qualifying as used oil.

Suggested resolution: Revise the regulations to eliminate the word "solely" from the statement in WAC 173-303-515(a)(ii).

B. Designation of compressed gases floating on other substances

Issue: Cylinders of compressed gases commonly include solvent mediums for even dispersion of the gases throughout the cylinder. Without the solvent mediums, the gases would be too reactive for use or storage. For example, acetylene is evenly dispersed throughout a medium of acetone. Formaldehyde is commonly dispersed throughout a methanol solution in the cylinder. When designating compressed gas waste, it is uncertain whether or not the "other" substance present should be included in the designation. Difficulties in the determination of the appropriate DOT shipping name could occur if the other substance is included. Formaldehyde, for example, is generally shipped using only this substance as the proper shipping name, even though methanol is also present. If the waste is designated due to methanol as well, however, the DOT shipping name may need to reflect both materials, a non-standard situation.

Suggested resolution: First, add a statement to the ignitability section of WAC 173-303, under compressed gas, to indicate that consideration must be given to the medium containing the gas when determining ignitability. For example, the methanol in the formaldehyde actually makes the solution ignitable instead of the usual identification of combustible.

Often, the Material Safety Data Sheet (MSDS) does not identify the medium for the gas, only the gas itself, and generators need to be aware of all materials present to do a complete designation, including toxicity, persistence, and carcinogenic identification of the complete mixture. As an alternative, consider publishing guidance to the effect that the non-primary medium in compressed gas cylinders need not be included in the designation process.

This would potentially result in non-designation of some wastes, but would resolve the potential conflict with DOT shipping names which could otherwise .