

# Designation

*“What shouldn’t go in the dumpster”*



Designation -- identifying your waste so you can properly dispose of it.

## ***What is designation? Why do I care?***

- ❖ Waste codes drive counting
- ❖ Counting determines generator status → rules
- ❖ Rules → disposal options, waste management costs

D001?



F003?

**Designation is the process** of figuring out whether or not a waste is a dangerous waste.

It is important to you and your business because the designation process assigns dangerous waste a waste code.


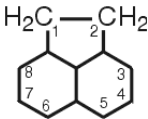




A waste code is a letter and number combination that tells the Treatment, Storage, and Disposal (TSD) facility receiving your waste what it is. This determines what must be done to the waste before final disposal.

Waste codes affect how your waste is counted. This determines generator status (small, medium, or large quantity generator). This in turn determines what rules you must follow, including your management and disposal options .

How the TSD manages your waste is determined by the waste codes and the land disposal restrictions for that type of waste. The land disposal restriction paperwork for your waste should be attached to the uniform hazardous waste manifests used by medium and large quantity generators.

The amount of treatment or type of disposal required by the land disposal restrictions make a big difference as to how much it will cost to dispose of your waste.

## What makes a waste dangerous? (aka CRIPTT)

<ul style="list-style-type: none"><li>▪ <b>C</b>orrosive</li></ul>		<ul style="list-style-type: none"><li>▪ <b>P</b>ersistent</li></ul>	
<ul style="list-style-type: none"><li>▪ <b>R</b>eactive</li></ul>		<ul style="list-style-type: none"><li>▪ <b>T</b>oxic (<i>Federal</i>)</li></ul>	
<ul style="list-style-type: none"><li>▪ <b>I</b>gnitable</li></ul>		<ul style="list-style-type: none"><li>▪ <b>T</b>oxic (<i>WA State</i>)</li></ul>	

If you have a waste that appears to fit any of these categories, you can use the designation checklist to fully designate the waste.

Use the CRIPTT acronym to remember the six categories. CRIPTT stands for:

**C** - corrosive. Corrosive wastes are acids or bases – they corrode metal and can burn flesh. In Washington state, corrosive wastes can be solid or liquid. Common examples – spent battery acid and spent caustic cleaner.

**R** - reactive. Reactive wastes explode or give off toxic gases under certain conditions. Think gunpowder, cyanide, or sulfide.

**I** - ignitable. Ignitable wastes burn easily. One example is flammable parts washer solvent.

**P** - persistent. Persistent wastes don't decay in the environment. They contain halogenated organic compounds (HOC) or polycyclic aromatic hydrocarbons (PAH), which are types of chemicals that bioaccumulate. A good example is chlorinated brake cleaner.

First **T** - federally toxic. These wastes contain metals or toxic chemicals. They're found on a list called the Toxicity Characteristics List. They include lead, cadmium, chrome, MEK, and vinyl chloride.

Second **T** - state toxic. These wastes kill fish, rats or rabbits. Common examples include are herbicides, pesticides, and sterilizers.

## Designation checklist

1. Is it a solid waste?
2. Is it an excluded waste?
3. Is it a discarded, unused chemical product?
4. Is it a process waste?
5. Is it an ignitable waste?
6. Is it a corrosive waste?
7. Is it a reactive waste?
8. Is it a federally toxic waste?
9. Is it a state-only toxic waste?
10. Is it a state-only persistent waste?
11. Is it exempt for recycling?

This is a simplified version of the detailed checklist found in the Appendix folder.

**Advantages** to using this checklist:

- It will **walk you through the questions** you need to ask, step by step
- It **shows the references** in the dangerous waste regulations for the information you need
- It **results in a written record** of how you designated the waste. This will help you talk to compliance inspectors when they come to talk to you.

Often times you designate the waste, and it isn't until years later that you are inspected. The checklist will refresh your memory, and let you show the inspector how you designated your waste.

## Two ways to designate waste

Generator knowledge



Testing

There are two ways you can designate a waste:

- Generator knowledge or
- Testing

We prefer to use generator knowledge to designate because testing costs money - but if we don't know enough about a waste we may need to test it. Or else you can simply assume it is dangerous waste.

Use generator knowledge as much as possible to avoid testing and to minimize the number of tests needed if testing can not be avoided.

If you find a "mystery drum" at your site, you will have to test it to designate it.

## Generator knowledge



- ❖ What processes/steps created the waste?
- ❖ What raw materials went into those processes?
- ❖ What does the MSDS reveal?
- ❖ What percentage of each material could be in the waste?
- ❖ Limitations of MSDS

You need to **know every step involved** in the processes that lead to the generation of the waste.

You need to **know every raw material** that becomes part of the waste. Make reasonable estimates of the relative weight percentages of each raw material in the waste.

**Get MSDS's** for every material used. **With MSDS's and weight** percentages you can characterize the chemical and physical properties of your waste.

But there are limitations to MSDS's.

## Limitations of MSDSs

- ❖ **Made for safety reasons, not waste disposal**
- ❖ **Describe the product, not the waste**
- ❖ **Processing may cause chemical changes**
- ❖ **Volatile chemicals may be gone (check flash point)**
- ❖ **Chemicals may not be listed (proprietary knowledge)**
- ❖ **May not be made from test results**

MSDSs need to be used thoughtfully

MSDSs are made for safety reasons, not for waste disposal.

MSDSs describe the product, but not necessarily the waste. Remember, you are designating the waste as a whole, not any particular MSDS.

Did processing cause chemical reactions to occur that changed the chemicals listed by the MSDS into new compounds?

Did volatile chemicals evaporate during processing? Look at the flash point of chemicals.

Chemicals with low flash points may evaporate, if given the opportunity

Were chemicals introduced that are not listed on a MSDS because they were not present at high enough concentration to be required to be listed?

Does the product have proprietary ingredients? The manufacturer's tech hotline often won't tell you them about unless you tell them you are trying to comply with Federal RCRA disposal requirements.

Did the person who wrote the MSDS do a thorough job? Or did they guess about what's in their product?

## Waste testing



- ❖ Determine tests needed ([WAC 173-303-110](#))
- ❖ Talk to lab about procedures
- ❖ Use/ document representative sampling methods
- ❖ Test it yourself or know what tests need to be run

- If you don't have enough process knowledge, see **section -110** in the DW regs. This outlines testing and sampling requirements. Test results are useless if they are not the right test. Don't think that just because you pay someone to test your waste, that they will run the right tests or even test your waste at all. If you are not sure about which test to run, call your Ecology regional office and ask.
- Once you know which tests to run, call a few labs, and compare costs. When you pick one, **ask what procedures they need you to follow**. Have them send you the sampling containers. You may need to add a preservative or ice your sample before you ship it.
- Before sampling, **think about safety** – gloves, eye shielding, and electrically grounding containers of flammable waste. If you don't have any idea what the waste is, seriously consider hiring a professional to do the job.
- If you test your waste, you need to **take a representative sample**. If the waste is the same from top to bottom it is easy to get a good sample. If the waste is layered or has liquids on top and solids on the bottom you need to think about how much of each layer is needed for a representative sample. **Keep a record** of how you sampled the waste and attach it to the test results in your files.
- If you are not going to test your waste yourself, at least call Ecology and find out what tests need to be run. If you do this, you can **find out if the person you hired to sample and test is planning on doing the right tests**. This is a basic indication that they know what they are doing.

## Practice #1

### Designate barrier coat red primer



- 8 cans of unused red primer
  - Primer is not useable or returnable
  - Has been through several freeze/thaw cycles
- Print from the Appendix folder:
  - Designation Checklist
  - Material Safety Data Sheet (MSDS) for red primer

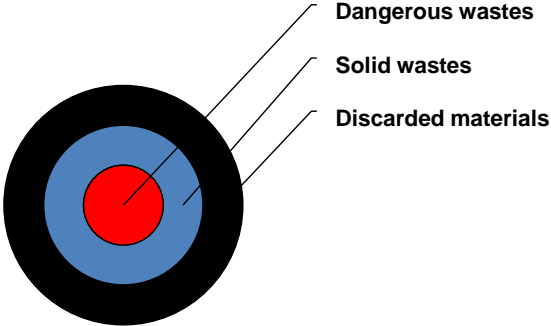
Practice #1: Designate barrier coat red primer.

Scenario: You clean out the “boneyard” in your shop and find eight cans of unused barrier coat red primer. The paint has sitting outside for several years, so it is no longer usable. The manufacturer won’t take it back. Now it is your job to find out whether the material is hazardous. Then you need to determine the code for disposal.

You need printouts of the designation checklist and the Material Safety Data Sheet (MSDS) for this material. Those are in the Appendix folder. In the next slides you will work through the checklist, using information from the MSDS and other sources, to determine the codes you need to put on the primer.

**Solid waste**  
**WAC 173-303-016**

- If you are throwing it away, planning to throw it away, or abandoning it in the “bone yard,” it’s probably solid waste.
- Don’t let the word “solid” fool you – do the dumpster test.



**Step 1 - Is it a solid waste?** The checklist indicates the regulations talk about solid waste in section -016.

“(a)The purpose of this section is to identify materials that are and are not solid wastes.”

The underlying idea of this section is that in order for something to be dangerous waste, it must first be solid waste. Something that is a product can not be a solid waste, and so it can not be dangerous waste

**Don’t let the word “solid” fool you.** If you are thinking about putting the waste in a dumpster and you are a business, the waste is probably considered to be solid waste. Can you put liquids in the dumpster? Yes. Gases? Yes, you can have them in a tank and put the tank in the dumpster. So **liquids and gases can also be solid waste.** Should you put liquids or gases in the dumpster? No.

**First question** – Is the red primer considered to be solid waste? Could we put it in the dumpster? Yes – so, it is solid waste. Of course, you never put liquids or dangerous waste in the dumpster.

**So, the answer** to question 1 is yes, the red primer is solid waste.

## Excluded waste

### [WAC 173-303-071](#)

Wastes excluded for some reason:

- ❖ Domestic sewage, permitted industrial wastewater, household wastes, agricultural crops, irrigation return flows, roofing tar, shingles, samples, etc.
- ❖ Seven pages in all

### **Step 2 - Is it excluded waste?**

The checklist tells us that the regulations talk about excluded waste in Section -071.

Section -071 starts: "Certain categories of waste have been excluded from the requirements of chapter 173-303 WAC, except for WAC 173-303-050, because they generally are not dangerous waste, are regulated under other state and federal programs, or are recycled in ways which do not threaten public health or the environment."

This is followed by seven pages of excluded wastes. Read them now or later. For the purposes of this exercise we'll just tell you that the red primer paint is not an excluded waste.

**So the answer** to question 2 is no, the red primer is not excluded.

### Discarded chemical products

[WAC 173-303-081](#), [WAC 173-303-9903](#)

- ❖ “Product,” therefore unused
- ❖ Single active ingredient (per definition in [-040](#))
- ❖ **P** codes *more* toxic
- ❖ **U** codes *less* toxic



### Step 3 - Is it a discarded chemical product?

The checklist tells us that the regulations address discarded chemical products in Section -081, which reads in part, “A waste will be designated as a dangerous waste if it is ..... from the management of ... a product...or intermediate...listed in the discarded chemical products list, WAC 173-303-9903.”

#### There are two key ideas:

- In order to be a P coded or U coded waste **it must be unused**. (Remember, “product” means it hasn’t been used.)
- In order to have a P or U waste code, the waste can have **only one active ingredient**, and that ingredient must be found on the list in WAC 173-303-9903. There can be fillers, surfactants, propellants, colorants, preservatives, none of which are considered active ingredients, but there can be only one active ingredient. (See the definition of “Commercial chemical product or manufacturing chemical intermediate” in section -040.)

**Go to Section -9903** to find the listed chemical and their codes. P coded chemicals come first. These are the most toxic chemicals. The U coded chemicals come next. They are less toxic but still dangerous. Would the spent red primer we’re designating have a P or U code? **Look in section II of the MSDS**. You can look by chemical name, but the Chemical Abstracts Service (CAS) number is more accurate. **Many chemicals have more than one name**, but every chemical has only one CAS number – so use that whenever possible.

Do any of the chemicals listed on red primer MSDS match any chemicals on the P or U code list? Check the U code list (especially!).

You see **mixed xylene** CAS #1330-20-7, coded as **U239**

So the chemicals on MSDS match U codes. Does that mean the red primer gets designated with a U waste code?

No. What’s in the can is unused chemical product, but it has **more than 1 active ingredient**, so it can’t be a U code waste.

## Discarded chemical products (cont.)

- ❖ Does MSDS show a match to P or U codes?
- ❖ If there is a match, does that mean you have found the proper code?
- ❖ Remember – must be unused **and** single active ingredient



Do any of the chemicals listed on red primer MSDS match any chemicals on the P or U code list? Check the U code list (especially!).

You see **mixed xylene** CAS #1330-20-7, coded as **U239**

So the chemicals on MSDS match U codes. Does that mean the red primer gets designated with a U waste code?


**No.** What's in the can is unused chemical product, but it has **more than one active ingredient, so it can't have a U code waste.**

(The pigment is the only active ingredient)

## Source wastes

[WAC 173-303-082](#), [WAC 173-303-9904](#)

- ❖ Non-specific sources: **F** codes
  - ❖ 28 different codes
  - ❖ Read carefully
- ❖ Specific sources: **K** codes
  - ❖ Particular industrial source



#### Step 4 “Is the waste from a dangerous waste source?”

The checklist tells us that the regulations address dangerous waste sources in Section -082. It says, “WAC 173-303-082 Dangerous waste sources list appears in ... -9904... Any waste that is listed ...must be ...identified as DW.”

In -9904 you can see there are two types of source wastes – non-specific sources, which are the F codes, and specific sources, which are the K codes.

There are **28 different F codes**. F001-F005 are solvents. F006 - F019 are from electroplating and heat treating. F020 –F039 are from a variety of other sources.

K code wastes are **specific source wastes that come from a particular industrial source**. If your business is not in that industry, your waste doesn't get the K code.

Is there an F code or a K code that would describe the red primer? Look in section II of the MSDS and on the F code list.

None of the MSDS chemicals match the chemicals listed under F001 or F002. The MSDS lists xylene at 13%, which is found under F003. But read the F003 description carefully. Does the red primer contain only xylene, or only F003 materials, or an F003 material and more than 10% total of F001, F002, F004, and F005? No, it doesn't.

Go to section -040 and look at the definition of spent material. Is the paint spent? Has it been used for its intended purpose? No. Has solvent been used? No. So it does not meet the definition of F001, F002 or F003.

It can not be F waste because it is not spent, it can not be F003 because it is not 100% xylene, or xylene with more than 10% other F code materials. And EPA considers the xylene to be an ingredient in the paint, not a solvent.

## Source wastes (cont.)

[WAC 173-303-082](#), [WAC 173-303-9904](#)



- ❖ PCBs
  - ❖ Found in older electrical equipment
  - ❖ May have decal with ppm
- ❖ State source code: WPCB
  - ❖ Find after list of K codes
- ❖ Washington limit – 2 ppm
  - ❖ More stringent than federal

In Washington state, there is a state listed waste – WPCB for PCB wastes – shown after the K codes.


PCBs are normally found in older electrical equipment – transformers, particularly. Many transformers display a decal saying what level of PCB it contains (or in some cases that it was manufactured without PCBs).

In Washington, the limit is 2 ppm, but the federal limit is 50 ppm – so something that's not federally regulated can be considered a **state** dangerous waste.

## Ignitable (D001)

[WAC 173-303-090 \(5\)](#)

- ❖ Liquid, flash point less than 60 C (140 F)
- ❖ Ignitable solid
- ❖ Ignitable compressed gas
- ❖ Oxidizer



**Question 5 - is the red primer waste an ignitable waste?**

The checklist tells us that ignitability is described in the regulations in Section -090, subsection (5).

Subsection (5) says “**Characteristic of ignitability.** (a) A solid waste exhibits the characteristic” ... if it ... “has any of the following properties”

A waste can be classified as ignitable if it is a:

- Liquid, with a low flash point
- Ignitable solid
- Ignitable compressed gas
- Oxidizer (Materials that it will help other materials burn)

**Is the red primer an ignitable dangerous waste** Section IV of the MSDS says the flashpoint (FP) is 50°F.

**So yes, it is ignitable, with the waste code of D001**

## Corrosive (D002, WSC2)

### WAC 173-303-090 (6)

- ❖ Water-based with  $\text{pH} \leq 2$  or  $\geq 12.5$  (aqueous)
- ❖ Liquid that corrodes steel  $> 0.25$  inch per year
- ❖ Solid, mixed with water, has  $\text{pH} \leq 2$  or  $\geq 12.5$  (WA only)



**Question 6** - Is the red primer corrosive waste?

**Corrosivity** is in the Dangerous Waste Regulations in Section -090 subsection(6).

**Subsection (6) states, "Characteristic of corrosivity.** (a) A solid waste exhibits the characteristic if" ... it has "one or more of the following properties:"

- 1) Water-based (i.e. aqueous) with a pH either less than 2 or greater than 12.5.
- 2) Liquid, but not water based, and corrodes steel at a rate  $>1/4$ " per year.
- 3) Solid which, mixed with water, becomes aqueous and has a pH of less than 2 or greater than 12.5.

Does the red primer MSDS indicate that the spent red primer will be corrosive DW?

Section III says it is not miscible in water. Section II says it is made organic solvents, and does not contain water, so you can't measure pH.

It will not corrode steel at a rate greater than  $1/4$ " year, since it is made with organic solvents, not organic acid.

It's not solid so it can't be solid corrosive.

**Answer: no, it is not a corrosive waste.** Nothing in MSDS indicates any corrosive characteristics.

## Reactive (D003) WAC 173-303-090 (7)

- ❖ Prone to violent, spontaneous change
- ❖ Reacts violently with water
- ❖ Forms potentially explosive mixtures with water
- ❖ Gives off toxic gases when mixed with water
- ❖ Cyanide or sulfide bearing waste that gives off toxic gases
- ❖ Explodes
- ❖ DOT-defined explosive



### Question 7 - Is the waste a **reactive** waste?

The checklist indicates that reactivity is discussed in Section -090 subsection (7).

Subsection (7) states: "Characteristic of reactivity. (a) A solid waste exhibits the characteristic" ... if it has ... "one or more of the following properties:"

- Prone to **violent, spontaneous change**
- **Reacts violently with water**
- Forms potentially **explosive mixtures with water**
- Gives off **toxic gases** when mixed with water
- **Cyanide or sulfide bearing waste** that gives off toxic gases
- **Explodes**
- **DOT-defined** explosive

**Is the red primer a reactive waste? Section V of the MSDS says it is stable**

Section IV says container may explode if exposed to extreme heat.

**The intention of reactivity is to regulate waste that reacts under ordinary conditions.** That is, it is shock sensitive, (so don't drop it), or if you put a match to it, it explodes.

If we drop a can of the paint it won't explode, and if we put a match to it will burn, since it is ignitable. But it is not inherently explosive under normal conditions.

**So the answer is no, it is not reactive.**

## Federal Toxic (D004-D043)

WAC 173-303-090 (8)



- ❖ Toxicity Characteristic List
- ❖ Mostly metals, solvents, pesticides
- ❖ Extract using Toxicity Characteristic Leaching Procedure (TCLP)
- ❖ Amount by weight – mg/L
- ❖ **1% ≈ 10,000 PPM ≈ 10,000 mg/L**
  - ❖ **Specific gravity = 1.0**

### Question 8 – Is the waste Toxic?

Toxicity is addressed in **Section -090 (subsection 8)**.

**Subsection (8)**. “Toxicity characteristic. (a) A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure...the extract...contains any of the contaminants listed in the toxicity characteristic list in (c) of this subsection...”

The Toxicity Characteristic List is a group of chemicals that are toxic – mostly metals, solvents, and pesticides.

If your waste has any of the chemicals on the toxicity list at amounts equal to or greater than the limit shown, your waste will have the associated DW code.

**Do you see any red primer chemicals listed on the toxicity list? No**

For your information, by weight, 1% is roughly equal to 10,000PPM which is roughly equal to 10,000Mg/L

**Could other codes** from the toxicity list apply? Possibly but not if you trust what they have put on the MSDS. And there is no reason not to trust the MSDS at this point.

## Toxicity - Beyond Question #8

- ❖ Can I stop at question #8?
- ❖ MQGs and LQGs can stop
  - ❖ Stringent disposal rules
  - ❖ Encouraged to continue – for full knowledge
- ❖ SQGs must designate for State Toxicity
  - ❖ Less stringent disposal rules
  - ❖ Questions 9 and 10



**Under Washington State** regulations, if you are a Medium Quantity or Large Quantity Generator and you have determined your waste is dangerous waste, you can end designating at the Federal Toxicity status. You do not have to answer questions 9 and 10 on the checklist. **MQGs and LQGs must send their dangerous waste to a regulated Treatment, Storage and Disposal (TSD) facility.** But **SQGs** can send waste to less tightly-regulated facilities, so they are **required to continue designation and answer questions 9 and 10.**

**Ecology encourages all generators** to designate all the way through the checklist so **you know all reasons why a waste is a dangerous waste**, and know enough to avoid all the problem chemicals when you look for alternatives that are not dangerous waste.

## Washington state-only toxic (WT01, 02)

### WAC 173-303-100 (5)

- ❖ Poisonous
  - ❖ Kills fish, rats or rabbits
- ❖ Two ways to determine
  - ❖ Bioassay - Expensive
  - ❖ Book designation
    - ❖ Use weight percentages
    - ❖ Determine equivalent concentration



### Question 9 - Is the waste a Washington state toxic?

The checklist says that regulations for Washington state toxic wastes are in **Section -100**.

**Washington state toxic wastes have the waste codes of WT01 or WT02.** They are dangerous wastes that can kill fish, rats or rabbits.

**There are two ways** to determine whether or not a waste is a Washington State toxic waste:

•**Run a bioassay** on a sample of waste. That is, **test a sample** of the waste on rats or fish. **If enough of them die, then the waste is** dangerous waste. This is expensive, so most people avoid it.

•**Do a “book designation”**. You calculate an equivalent concentration (EC) using the weight percentages of the components of the waste.

Next is **book designating the red primer**.

## Book designation

### Designation

#### WAC 173-303-100 (5) (b)

- ❖ This is the formula to book designate waste.
  - ❖ Must know chemicals and weight %
  - ❖ EC = equivalent concentration

$$EC\% = \frac{\%X's}{1} + \frac{\%A's}{10} + \frac{\%B's}{100} + \frac{\%C's}{1,000} + \frac{\%D's}{10,000}$$

- ❖ If  $EC \geq 1.0\%$  = waste is WT01
- ❖ If  $0.001\% \leq EC < 1.0\%$  = waste is WT02
- ❖ If  $EC < 0.001$  waste is not dangerous waste

**You use this formula to book designate waste.** You use the weight percentages of your waste's components in the applicable parts of the formula to calculate a number called the equivalent concentration, or EC.

- If the calculated EC is greater than 1, then the waste has the code WT01.
- If the EC is between 0.001 and 1.0 then the waste has the code WT02.
- If the EC is less than 0.001, then it is not a Washington state toxic waste.

**You have to know** the chemicals in your waste and their relative weight percentages to book designate.

**Toxic Category Table**  
**WAC 173-303-100 (5) (b)**

Toxic Category	Fish	Oral Rat	Inhalation Rat	Dermal Rabbit
	LC <sub>50</sub> (mg/L)	LD <sub>50</sub> (mg/kg)	LC <sub>50</sub> (mg/L)	LD <sub>50</sub> (mg/kg)
X	<0.01	<.5	<.02	< 2
A	0.01 - <0.1	.5 - <5	.02 - <.2	2 - <20
B	0.1 - <1	5 - <50	.2 - <2	20 - <200
C	1 - <10	50 - <500	2 - <20	200 - <2000
D	10 - 100	500 - 5000	20 - 200	2000 - 20,000

❖ See Section XI (11) of the MSDS for toxicity data on a chemical  
❖ But MSDS for red primer paint does not have a Section XI !

The formula uses toxic categories of X, A, B, C, and D. You find these in the Toxic Category Table in Section -100 Subsection 5(b).

The columns are labeled according to the type of test used to determine a chemical’s level of toxicity – Fish, Oral Rat, Inhalation Rat, Dermal Rabbit.

LC50 is the lethal concentration (LC) that kills half (50%) of the fish, rats, or rabbits in the population exposed to that concentration (mg/L).

Use the toxic information for a chemical and assign that chemical a toxic category letter – X, A, B, C, D

You typically find toxicity data on a chemical in section XI of the MSDS. So look to section XI in the MSDS of the red primer paint.

***What to do when no toxicity data?  
Is red primer WT01 or WT02?***

<u>Material</u>	<u>Toxicity</u>		<u>Toxic Category</u>
aliphatic petroleum distillates	Oral rat LD <sub>50</sub>	9,000 mg/kg	None
aliphatic petroleum hydrocarbons	Oral rat LD <sub>50</sub>	12,000 mg/Kg	None
mixed xylene	Oral rat LD <sub>50</sub>	3,500 mg/Kg	D
Ethyl benzene	Fish LC <sub>50</sub>	52 mg/l	D
Ethyl benzene	Oral rat LD <sub>50</sub>	3,400 mg/kg	D

**What should you do when you don't have the toxicity data for the chemicals in your waste?**

Consider calling someone in Ecology's Hazardous Waste and Toxics Reduction Program (link on Slide #4) and asking for toxicological information. Ecology has subscriptions to the Hazardous Substances Data Base (HSDB) and the Registry of Toxic Effects of Chemical Substances (RTECS). We can provide you the available information without charge.

**If you called Ecology, we would give you what you see on this slide.**

For instance, you tell us that you have **aliphatic petroleum distillates**, CAS# 64742-89-8. (Get the CAS# from the MSDS.) Ecology can tell that it has an **Oral Rat LD50 of 9,000 mg/kg**. Looking at the Toxic Category Table in the regulations, under Oral Rat, you see that aliphatic petroleum distillates are not even toxic enough to be category D

Similarly, the **aliphatic petroleum hydrocarbon** has an **Oral Rat LD50 of 12,000 mg/kg**. It is not regulated as a state toxic material.

**However, the red primer MSDS lists mixed xylene** as having an **oral rat LD50 of 3,500 mg/kg**. What toxic category would that be? **Category D**.

Similarly the MSDS lists **ethyl benzene** as having a **Fish LC50 of 52 mg/l**. What toxic category is that? Again, toxic **category D**. Ethyl benzene also has an **oral rat LD50 of 3,400 mg/kg** which is **category D**.

### ***Is Red Primer WT01 or WT02?***

<u>Compound</u>	<u>Weight %</u>	<u>Toxic category</u>
mixed xylenes	13	D
ethyl benzene	4	D

$$EC\% = \frac{\%X's}{1} + \frac{\%A's}{10} + \frac{\%B's}{100} + \frac{\%C's}{1,000} + \frac{\%D's}{10,000}$$

$$EC\% = \frac{0}{1} + \frac{0}{10} + \frac{0}{100} + \frac{0}{1,000} + \frac{13+4}{10,000} = 0.0017$$

- ❖ EC = 0.0017
- ❖ 0.001% < EC < 1.0% = WT02
- ❖ The red primer designates as WT02, in addition to D001

**Knowing the toxic category of each compound** and knowing the weight percentage of each compound from the MSDS allows you to use the Equivalent Concentration formula.

The **mixed xylene & ethyl benzene** are Toxic Category D materials. Replace the “%D’s” with their weight percentages.

**The rest of the equation is zeros** since there are no Toxic X, A, B, or C materials.

When you **run the calculation**, it shows that **the equivalent concentration is 0.0017**

The calculated Equivalent Concentration is **more than 0.001 and less than 1%**, so the **red primer waste book designates as WT02**, according to the Dangerous Waste regulations.

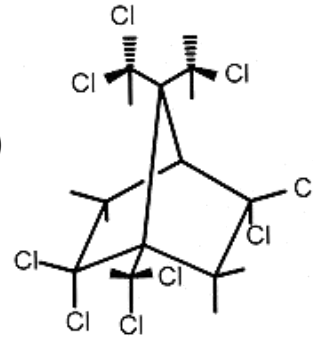
This is **in addition to the D001** designation you determined earlier.

## Persistent wastes

WP01, WP02, WP03

[WAC 173-303-100 \(6\)](#)

- ❖ **Halogenated Organic Compounds**
- ❖ (HOCs >1.0% WP01; 0.01% to 1.0% WP02)
  
- ❖ **Polycyclic Aromatic Hydrocarbons**
- ❖ (PAHs >1.0%, WP03)
- ❖ See [Section -040](#) –Definitions for PAH definition



**Hint: look for chlor, fluor, bromo**

### Question 10 - Is the red primer a Washington state persistent waste?

**Persistent** means that the chemical breaks down very slowly in the environment. Because of this, the chemical will accumulate in organisms. This is called bioaccumulation.

We find out about persistent wastes in **Section 100, subsection (6)** of the dangerous waste regulations.

“(6) Persistent criteria. For the purposes of this section, persistent constituents are chemical compounds which are **either halogenated organic compounds or polycyclic aromatic hydrocarbons...**”

**Halogenated Organic Compounds**, or HOCs, are compounds with fluorine, chlorine, bromine, or iodine attached directly to a carbon atom. In practice, this means that you should look for syllables like “chlor-”, “fluor-”, and “bromo-” in your chemical’s name. If a waste is **more than 1% HOC it’s a WP01** waste, and if it’s **between 0.01% and 1% it’s a WP02** waste.

**Polycyclic Aromatic Hydrocarbons** or PAHs, are chemicals that contain two or more fused benzene rings. If a waste is **more than 1% PAH it’s a WP03** waste.

**A list of the Washington-regulated PAHs is in Section -040 -Definitions.** PAH’s are generally found in asphalt and creosote.

Are there any HOC’s or PAH’s in red primer waste? No, there doesn’t seem to be.

## Exempt for Recycling?

### [WAC 173-303-017](#)

- ❖ Used or reused **as ingredients** in industrial process to make a product **without being reclaimed**
- ❖ Used or reused **as effective substitutes** for commercial products
- ❖ **Returned** to the original process **without being reclaimed**
- ❖ **Specific examples:** pulping liquors, etc.



**The last checklist question is: Is the waste exempt for recycling?**

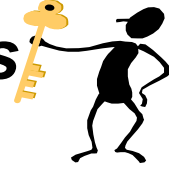
According to our checklist we find out about being exempt for recycling in **Section -017**.

**“1) The purpose of this section is to identify those materials that are and are not solid wastes when recycled.”** So some wastes being recycled are not solid waste and therefore not dangerous waste.

Most things being recycled for reuse need to be reclaimed in some manner, such as spent solvent needing to be distilled before reuse. So this exemption does not apply to as many instances as one might think.

**Would the spent red primer be exempt** for recycling under the scenario we are in? **No it would not.**

# Practice #1 - answers



1	Is it a solid waste	Yes
2	Is it an excluded waste	No
3	Is it a discarded, unused chemical product	No
4	Is it a process waste	No (not enough info)
5	Is it an ignitable waste	Yes – D001
6	Is it a corrosive waste	No
7	Is it a reactive waste	No
8	Is it a federally toxic waste (TCLP)	No
9	Is it a state-only toxic waste	Yes – WT02
10	Is it a state-only persistent waste	No
11	Is it exempt for recycling	No

**Here is the summary of the designation of the red primer paint waste.**

It is dangerous waste and has the **waste codes D001 and WT02.**

## Practice #2



- ❖ A fork lift runs over the 8 cans of red primer, spilling paint everywhere. After it dries, the janitor cleans it up using ZIP STRIP™
- ❖ Does the resulting sludge designate as dangerous waste?
- ❖ Assume all red primer constituents except red paint pigment has evaporated. Residual pigment is not dangerous waste.
- ❖ Determine federal and state waste codes. (See following slides)

### **Practice #2: Determine waste codes for sludge from cleaning up red primer.**

Scenario: You have determined that the red primer is dangerous waste when it is discarded. Unfortunately before you can send it offsite, a forklift runs over it. This is at 5PM on Friday and the forklift operator does not report the spill. When the janitor finds the paint Monday morning, it is bone dry and stuck to the floor. Only the paint pigment is left to clean up, and it is not dangerous waste.

The janitor reads that Zip Strip™ is toxic and opens doors and windows prior to starting. He pours a little of the cleaner on the concrete floor, wire brushes the paint loose and sucks everything up with shop vac. He does it so fast practically none of the Zip Strip™ evaporates. Use another copy of the designation checklist and the related MSDS in the Appendix Folder to work through designating the waste from the shop vac.

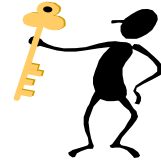
A few hints to get you started:

Q1 - it is solid waste

Q2 - it is not excluded

When you call Ecology's hazardous waste program, you are given the toxicological information on the next slides.

## Practice #2 - answers



1	Is it a solid waste	Yes
2	Is it an excluded waste	No
3	Is it a discarded, unused chemical product	No - It is used, a spent material
4	Is it a process waste	Yes - F002 and F003
5	Is it an ignitable waste	No
6	Is it a corrosive waste	No
7	Is it a reactive waste	No
8	Is it a federally toxic waste (TCLP)	No
9	Is it a state-only toxic waste	Yes – WT02, as shown in next slide
10	Is it a state-only persistent waste	??
11	Is it exempt for recycling	??

### Designation Checklist Questions for Practice #2:

1. Yes, the sludge is solid waste. You could throw it in the dumpster.
2. No, it is not an excluded waste.
3. No, it has more than one active ingredient, and it's been used, so it cannot be P-listed or U-listed.
4. It is a process waste.
  - It is not F001, since that really only applies to large scale industrial degreasing, and this is a cleaning activity.
  - Yes, it is F002 because before use it contained greater than 10% methylene chloride.
  - Yes, it is F003 because it contained greater than 10% methanol and F002 waste.
5. No, it is not an ignitable waste. Section IV of the MSDS says "Flash Point: No flash to BP TOC & Seta C.C." BP is boiling point, which section III of the MSDS says is 104°F. That's not helpful. So you go to other sources, such as Ecology or the manufacturer, to find that methylene chloride will not flash, mineral spirits has a flashpoint (FP) of 145°F, and methanol has a FP of 52°F. Manufacturer said the Zip Strip as a product has a FP greater than 140°F. The manufacturer also said it will not flash below 140°F unless the methylene chloride evaporates, which would leave a mixture of mostly mineral spirits/methanol. This does have a FP below 140°F, as low as 52°F for the methanol. Both methylene chloride and methanol are volatile (see the vapor densities) so how much of the methanol would be left to flash after most of the methylene chloride has evaporated is unknown. The janitor quickly cleaned up the Zip Strip™ because he didn't want to breathe it in. This example says that very little methylene chloride evaporated. So you can assume the waste is mostly composed of methylene chloride and paint pigment, (which as we said is not DW) with small amounts of mineral spirits and methanol.
6. No, it is not corrosive. Zip Strip™ and paint are not aqueous, so pH doesn't apply. Methanol is corrosive but manufacturer told you by phone that it corrodes steel at a rate slower than ¼" per year. This is reasonable as the product container is steel. The waste is not solid so you don't need to do the 50:50 dilution with water.
7. No, it is not reactive
8. No, it is not a federally toxic waste

## ***Is spent Zip Strip™ WT01 or WT02?***



You call an Ecology hazardous waste specialist, who gives you this data to help determine the state toxicity category.

<b><u>Material</u></b>	<b><u>Toxicity</u></b>		<b><u>Toxic Category</u></b>
<b>Methylene chloride</b>	<b>oral rat</b>	<b>1,600 mg/kg</b>	<b>D</b>
<b>Methanol</b>	<b>inhalation rat</b>	<b>84 mg/l</b>	<b>D</b>
<b>Methanol</b>	<b>dermal rabbit</b>	<b>16,800 mg/kg</b>	<b>D</b>

These values were provided by calling Ecology and asking a hazardous waste specialist for help to determine the state toxicity category.

***Is Zip Strip™ WT01 or WT02?***

$$EC\% = \frac{\%X's}{1} + \frac{\%A's}{10} + \frac{\%B's}{100} + \frac{\%C's}{1,000} + \frac{\%D's}{10,000}$$

	<u>Weight %</u>	<u>Toxic category</u>
Methylene chloride	80	D
Methanol	15	D

Therefore

$$EC\% = \frac{0}{1} + \frac{0}{10} + \frac{0}{100} + \frac{0}{1,000} + \frac{80+15}{10,000} = \mathbf{0.0095}$$

**0.001% < EC < 1.0% = WT02**

Question 9 – Is it a state-only toxic waste? Work through the formula.

Plug the data for the toxic category and the weight percentage of each compound into the Equivalent Concentration formula.

This gives you a result of 0.0095%. That is greater than 0.001% and less than 1.0%. So yes, the Zip Strip™ is a state-only toxic waste, code WT02.

## Practice #2 - answers

1	Is it a solid waste	Yes
2	Is it an excluded waste	No
3	Is it a discarded, unused chemical product	No - It is used, a spent material
4	Is it a process waste	Yes - F002 and F003
5	Is it an ignitable waste	No
6	Is it a corrosive waste	No
7	Is it a reactive waste	No
8	Is it a federally toxic waste (TCLP)	No
9	Is it a state-only toxic waste	Yes – WT02
10	Is it a state-only persistent waste	WP01
11	Is it exempt for recycling	No

Now you can fill in the answers to Questions 10 and 11.

**10. Yes, Zip Strip™ is a state-only persistent waste.** It is 80% methylene chloride. Remember the clue words for halogenated organic compounds – chlor- fluor- bromo-. And 80% is more than 1%, so the waste is WP01.

**11. No, the waste is not exempt for recycling.** You wouldn't reuse it or return it to its original process.

## Conclusion

- ❖ Work through designation step by step
- ❖ Call your regional office for help
- ❖ You can get ahead of the process. Designate chemicals before they come into your business. Avoid the chemicals that could cause your waste to be Dangerous Waste



Designation can be tricky, but if you follow the checklist, you'll work through it.

Call Ecology and ask for help if you need to.

Consider designating materials before they come into your business. Your job will be simpler if you keep out chemicals that could cause waste to be Dangerous Waste.