



State of Oregon  
Department of  
Environmental  
Quality

# Appendix Marion-A: Methodology Details

## Marion County Supplement

### 2005/06 Oregon Solid Waste Composition Study

June 30, 2007

This appendix gives a description of methodology and information specific to the Marion County supplement of the 2005/06 Oregon Waste Composition Study. More general information on the 2005/06 Waste Composition Study can be found on the DEQ web site at:

[www.deq.state.or.us/lq/sw/disposal/wastecompstudy2009.htm#2005](http://www.deq.state.or.us/lq/sw/disposal/wastecompstudy2009.htm#2005).

### Methodology:

Sampling for the Marion County study was conducted at the Marion County Waste to Energy Facility (energy facility) and the Browns Island Landfill - a limited-purpose landfill. Waste from the Salem-Keiser Transfer Station and the North Marion Transfer Station were sampled as they arrived at the energy facility in transfer trailers, rather than directly as delivered at the transfer station. This was done because some of the waste from the transfer station is taken first to Marion Recycling, where certain recoverable or non-burnable materials are removed, before the waste is shipped to the energy facility for disposal. Thus, sampling directly at the transfer station would not give a representative sample of the waste that actually went to the energy facility for disposal. Residue from Marion Recycling was also usually collected as it arrived at the energy facility, although special arrangements had to be made to obtain samples during a time that Marion Recycling was shipping its residue to Coffin Butte.

There were a number of Marion County waste streams that were not sampled as part of the study. These include 3 "single-material" waste streams for which the composition and quantity disposed are already known: medical waste delivered to the energy facility, whole loads of gypsum wallboard delivered to Browns Island, and tires taken to a number of out-of-county sites for disposal. Also, we did not sample self-haul waste sent to out-of-county facilities such as the Coffin Butte, Riverbend, Lakeside, and Hillsboro Landfills. Although some 15,244 tons of Marion County self-haul waste was taken directly to these landfills, the waste arrive sporadically and unpredictably making it impractical to schedule sample collection. Thus, self-haul waste delivered to out-of-county landfills was excluded from the scope of this study, although it was included in the scope of the overall Oregon waste composition study for 2005. By chance, one of the self-haul samples collected at these non-Marion landfills as part of the overall study turned out to be from a Marion County generator, but the results from this sample was excluded from this Marion County supplemental report.

Table Marion1 in the main Marion County supplement gives the number of samples collected for each different source of waste, by season. Samples were collected each quarter of 2005 during the months of March, June, September, and November/December.

## Choosing samples:

Within each waste source, samples were selected in a manner to be representative of all the waste within that source. Samples were collected during all seasons, on all days of the week, at all times of the day. For each of these, the number of samples collected was chosen to be proportional to the amount of waste being disposed based on season, weekday, and time.

For route trucks, the trucks were selected for sampling based on recent disposal records received from Marion County. Generally, garbage routes are collected in a similar manner from week to week. For example, if sampling were planned for Wednesday, Thursday, and Friday, the Department of Environmental Quality (DEQ) would put together a list of all of the route trucks that dumped at the energy facility on a recent Wednesday, Thursday, and Friday, listing the tons dumped, truck number, and time of day. Route trucks were randomly selected from this list in a manner such that any pound of waste would be equally-likely to be selected.

Specific drop box and transfer trailers bringing self-haul wastes from the transfer stations or wastes from Marion Recycling were not pre-selected for sampling, since there is no way to know which vehicles will be bringing in waste on any given day. For drop boxes, the contractor would randomly pick a time and then would select the first Marion County drop box that came in after that time. The same method was used to select transfer trailers and loads coming from Marion Recycling. For Browns Island loads, there are no scales and the landfill, and so Browns Island staff estimate quantities by volume. Only 2-3 samples were selected at Browns Island each quarter. In order to not bias sampling to small vehicles, the contractor was directed to choose samples from trucks in different size classes, where the sizes were based on the estimated volume of garbage brought in by trucks of different sizes. For example, in March, the contractor was directed to select a sample from one truck hauling 5 yards or less, one from a truck hauling between 6 and 10 yards, and one from a truck hauling 11 yards or more. Loads recorded by Browns Island staff as being the gypsum rate code were excluded from sampling.

## Sorting Samples and Compiling Results

All selected loads were sorted into 125 material categories of waste, and then the amount of waste in each material category was recorded and provided to DEQ by the contractor. A description of each category is included at the end of this appendix.

The method for analyzing results was the same as used in the 2002 and 2005/06 Oregon Waste Composition Study as a whole:

1. compile estimates of the composition of waste from each separate source or substream,
2. estimate the total amount of waste being disposed for each substream, and
3. combine the individual substream composition estimates into a total Marion County composition estimate by using the substream tonnages to produce a weighted average of all of the substreams.

This methodology requires that good estimates can be obtained for the total weight of garbage being disposed in each substream.

## Quantifying Marion County Waste

Marion County's disposal transaction database directly records information on all vehicles disposing of waste that directly shows the county of origin and also shows whether the vehicle is a garbage hauler route truck, compacting drop box, loose drop box, self-haul waste, or residue from a waste processing facility (Marion Recycling). Thus, unlike other parts of Oregon where the tonnage for each waste substream had to be estimated, the Marion County database allowed a direct full compilation of waste by substream, making quantifying the substreams very easy and accurate. The only substreams that had to have quantities estimated were the three classes of route trucks - residential, commercial, and mixed route trucks. Two sources of information were used to estimate the amount of waste delivered for each type of route truck:

- 1) Driver interviews for the 77 route trucks selected for sampling as part of this study, and
- 2) Estimates of substream tonnage for the 2002 study, which was based on a combination of driver interviews for the sampled trucks in that study, and survey information from a survey of all of the Marion County haulers on the classification of each of their routes.

Each of these two sources of information were used to estimate the percentage of route truck garbage that is from residential routes, commercial routes, and mixed routes. These two sets of percentages (from 2002 and 2005/06) were then averaged, and these averages were multiplied by the total route truck tonnage for 2005/06 in order to estimate the tonnage that comprised each of the three route truck categories.

For Marion County hauler wastes delivered to the Coffin Butte Landfill, the tonnage could be separated into route trucks, drop boxes, and residue from processing facilities, but Coffin Butte does not make any distinction in their database between compacting and loose drop boxes. For route trucks, the same percentages were used for residential, commercial, and mixed routes as was used for waste delivered to the energy facility. The drop box waste going to Coffin Butte was also assumed to be in the same ratio as the drop box waste going to the energy facility.

The overall compilation or estimate for each substream is shown in Tables Marion2 and Marion3 of the Marion County waste composition supplement.

## Contamination Analysis

Waste delivered to disposal sites is often highly cross-contaminated with other wastes or with water from rain or other external sources. For example, the material that is sorted and weighed as cardboard in the study may in fact contain significant weight from food or other materials smeared on the cardboard, rain that has soaked into the cardboard, or even other materials that are hidden inside flattened cardboard boxes. DEQ took random samples of field-sorted wastes back to a facility where the samples could be carefully re-sorted, cleaned, and dried, to determine how much "clean - dry" material is being disposed as opposed to the "dirty - wet" measurements made as part of the field study. The methodology for contamination analysis is outlined in Appendix C of the Oregon 2002 Waste Composition Study. The samples collected for this analysis are referred to as "detailed samples" or "contamination analysis" samples.

Marion County did not purchase any detailed samples, so just a couple of detailed samples were collected as part of the overall 2005/06 study. Results from contamination analysis samples from all of Oregon were applied to Marion County field waste composition results to give the "contamination-corrected" results shown in tables Marion5 through Marion7 and Marion9 of the Marion County Waste Composition Supplement. If anything though, these contamination corrections may slightly underestimate the true level of contamination for absorbent materials such as paper or light materials such as film plastic in Marion County for two reasons:

- 1) Although most of the contamination analysis samples were collected in the Metro and Willamette Valley area, some were collected from dry Eastern Oregon sites, where there was little moisture absorbed into the paper, reducing the contamination levels for the statewide results.
- 2) Self-haul samples show much less contamination than do route truck or compacting drop box samples. Because the Marion County study excluded 15,244 tons of self-haul waste taken to out-of-county facilities, the percentage of route truck and compacting drop box waste in the Marion County study was higher than the percentage of these substreams sampled in Oregon as a whole. Thus, the Marion County have a slightly higher percentage of very contaminated substreams than did the Oregon study as a whole.

## Material Categories for the 2005/06 Waste Composition Study

### Field Sorting Categories.

The individual material categories as sorted and weighed in the field are underlined, are preceded by numbers below, and are followed by descriptions. Groups of categories as used throughout this report are shown in bold, and are followed by numbers in parentheses that indicate the individual material categories included in the group category.

#### ***PAPER***

1. **Gable top beverage cartons.** Poly-coated bleached paperboard boxes that contain ready-to-drink beverages such as milk or orange juice. May include plastic pour spouts as part of the carton. Does not include cream or half&half boxes.
2. **Aseptic drink boxes.** Paper/foil/plastic laminate boxes used to package juice and other ready-to-drink beverages. Does not include aseptic containers used to package non-beverages.

3. **Wine bag-in-boxes.** Corrugated outer box with a plastic film bag inside used as a container for wine.
4. **Corrugated cardboard and kraft paper (OCC). 1 square foot and larger.** Unwaxed kraft linerboard and containerboard cartons and shipping boxes with corrugated paper medium. This category includes boxes shrink-wrapped in plastic and unbleached kraft (brown) paper bags. Excludes waxed and plastic-coated cardboard (plastic coating bonded to the cardboard), solid boxboard, and multi-walled bags that are not pure unbleached kraft.
5. **Corrugated cardboard and kraft paper (OCC). Less than 1 square foot in size.** - Same as above but smaller.
6. **Waxed corrugated cardboard.** OCC that is impregnated with wax, commonly used for grocery produce boxes.
7. **Hi-grade office/printing/writing paper (uncoated high-grades).** Printing, writing and computer papers, including mainly thermo-chemical pulps. Both virgin pulp substitutes and high-grade de-ink fibers are included. This category is composed of high-grade paper, which includes white ledger, colored ledger, computer printouts, computer tab cards, bond, copy machine, and carbonless paper. Includes white and pastel envelopes without windows, and high-grade reports wrapped in shrink-wrap packaging. Excludes glossy coated paper such as magazines, pure groundwood publications such as catalogs, astro-brights and other unbleachables, and glue-bound publications.
8. **Newspaper (ONP).** Printed ground-wood newsprint (minimally bleached fiber); commonly referred to as #1 news. This category includes glossy paper typically used in newspaper insert advertisements, if believed to be distributed with newspapers.
9. **Magazines.** Includes other glossy publications such as some catalogs, but excludes newspaper glossy inserts.
10. **Low-grade bleached/bleachable recyclable paper.** Includes other recyclable paper at least marginally acceptable in a #6 newspaper mix. This includes junk mail, glossy and uncoated advertising sheets, bleached boxboard and bags (non-poly-coated), bleached boxes with small plastic windows, envelopes except those included under high-grade and brown unbleached kraft envelopes, construction paper, blue print paper, thermal copy and fax paper, used envelopes with sticky labels and/or plastic windows, file folders, hanging file folders, greeting cards, sticky notes, paperbacks, uncoated groundwood catalogs and advertisements, phone books, egg cartons and other recyclable bleached molded paper products (but not paper plant pots). Includes paper bound with fasteners including spiral-bound notebooks and plastic reinforced tab dividers, cigarette boxes (not the individual packs) that do not have excessive foil, plastic. Does not include paper with grey or brown fibers or wet strength or poly-coated paper.
11. **Low-grade unbleached/unbleachable recyclable paper.** Paper with grey or brown fibers such as cereal boxes, shoeboxes clothing forms, and other grey and brown chipboard. Excludes poly-coated paper. Includes brown unbleached kraft envelopes, but excludes paper that was bleached and then re-dyed brown or grey, such as manila envelopes. Also includes bright-dye (fiesta and neon) papers and envelopes, which although originally bleached, are unbleachable and would contaminate other bleached paper.
12. **Polycoated paper.** Poly-coated bleached and unbleached paperboard used for ice cream, frozen TV dinners, and many other frozen food boxes. Includes multi-walled bags that are poly-coated or have a plastic layer (watch out for very thin polycoat layers). Includes non-drink box aseptic packaging such as soup cartons. Does not include cups or non-food poly-coated packages,
13. **Hard-covered books.** Books with hard covers, and excluding paperbacks.

14. **Compostable nonrecyclable paper.** Tissue, paper towel, napkins, plates and cups; take out packing (direct contact with sticky foods), molded paper plant pots, gable-top non-beverage cartons such as cream cartons unless they held hazardous materials. Excludes recyclable paper and non-compostable paper.
15. **Non-compostable, non-recyclable paper.** Printing or other non-packaging paper not included above that is not easily recyclable in the United States, and which is not acceptable in composting programs. Includes mixed paper and materials, photos, true carbon paper, juice and oil cans, foil containing wrapping paper, wallpaper, foil lined fast food papers, microwave paper food trays used in frozen dinners, individual cigarette packages, paper with large thick plastic windows, paper containers that held hazardous products, thin bound reports with plastic covers, and non-food polycoated boxes. Paper-bound 3-ring binders go here, but the paper contained goes in the appropriate grade.

***PLASTICS (see Additional Component Information)***

16. **Deposit plastic beverage bottles.** Any size beverage with an Oregon deposit for beer, soft drink, carbonated water and juice. Does not include out-of-state bottles or soft drink syrup containers.
17. **No-deposit plastic beverage bottles (RPCs).** 8-oz to 5 gallons plastic beverage bottle *without* an Oregon deposit such as milk, juice, water, alcohol, wine, smoothie, coffee, tea. Includes beer and soft drink bottles from out-of-state that are not marked with the Oregon refund value. Does not include cream, half & half, syrups, and powdered beverages.
18. **No-deposit very small, large beverage bottles.** Plastic Bottles less than 8 oz or larger than 5 gallons that hold ready-to-drink beverages. Mainly small liquor bottles.
19. **Other plastic bottles.** All non-beverage bottles 8 oz-to-5 gallons used for non-beverage food, medicines, vitamins, hair and bath products, laundry supplies, antifreeze, oil.
20. **Plastic tubs, pails #2 & #5.** Tubs, pails (buckets), flowerpots, plant trays from 8 oz to 5 gallon in size. Made from HDPE (#2) or PP (#5) plastic and meets the definition in Oregon Revised Statute 459A.650 for Rigid Plastic Container.
21. **Other plastic tubs, pails, and trays that meet Rigid Plastic Container definition.** Plastic packages of finite shape with a capacity of from eight ounces to five gallons. Includes cookie trays, PET tubs, trays with sidewalls that can contain at least 8 oz., clamshells. Does not include lids, unless the lid is attached or is itself a rigid plastic container. Includes plastic cups used commercially to package food, but not plastic cups sold as a product for home or office use (usually unmarked - included in "rigid plastic products"). Does not include tubs/pails made from HDPE or PP, or any bottles. Does not include flexible tubes like bathroom caulk, toothpaste.
22. **Other rigid plastic packaging.** Includes expanded polystyrene packaging and food trays (holding less than 8 oz), urethane foam packaging, containers larger than 5 gallons, plastic bottle and container lids and lids from glass, metal, or paper containers. Amended in 2000 to include "small rigid plastic containers" - plastic containers such as yogurt cups that are less than 8 ounces in size.
23. **Other rigid plastic products.** Dishware and utensils, including expanded polystyrene cups and plates when originally sold for home use (non-packaging), plastic household items, all-plastic furniture, and toys. Includes thermoset plastic products and "fiberglass" (mainly plastic) boat parts, corrugated roofing, and similar products. Includes polyurethane foam products, such as urethane foam carpet padding. Excludes products made primarily of PVC.

24. **Mixed plastics/materials.** Items whose predominant material is plastic, but is combined with other material, such as kitchen ware, toys, plastic pens, car parts with other components, non-vinyl floor tiles and coverings that have canvas, paper, or other types of backing material or significant non-plastic components, etc. Does not include items with significant amounts of PVC.
25. **PVC rigid plastic packaging.** Includes blister pack and other rigid packaging made primarily from PVC. Excludes PVC items that meet the definition of rigid plastic container. PVC is defined to include CPVC, PVDC, and other plastics that contain chlorine. Excludes blister pack where the paper card is heavier than the PVC (goes under mixed materials/PVC instead).
26. **PVC rigid plastic products.** Includes PVC pipe, flooring, windows, toys, and other products. Includes mixed plastic/materials products where the plastic is mainly PVC.
27. **Mixed materials/PVC.** Includes *any item that contains significant PVC* (but not a majority by weight) which would otherwise be in one of the following categories: mixed wood/materials, non-recyclable non-compostable paper (as mixed paper/materials), mixed textile/materials, miscellaneous organics, or miscellaneous inorganics. Examples include vinyl flooring that is not mostly plastic, wallpaper with vinyl backing, shoes with vinyl, blister-pack where the paper card is heavier than the PVC.
28. **Plastic beverage pouches.** Includes ready-to-drink beverages only.
29. **"Recyclable" polyethylene film plastic.** Includes plastic grocery bags, retail bags, newspaper bags, dry cleaner bags, pallet-wrap, shrink wrap, clear and black polyethylene plastic sheeting, hay sleeves and silage bags, fertilizer/peat/feed bags from nurseries and agricultural operations, furniture and mattress wrap, bubble wrap, woven lumber wrap, roofing material wrap, insulation wrap, commercial bags and liners, commercial parts packaging, and building wrap. Excludes any film that is not polyethylene or other polyolefin, any film that is laminated to other materials (tape/labels are OK), any bag used as a garbage bag (can liners and tied-off garbage bags), bags contaminated with food and other sticky/contaminating materials on the inside, food and household product packaging such as frozen vegetable bags, diaper packaging, bread bags, zip lock and similar household use bags, and plastic sheeting used for ground cloths or masking, if contaminated.
30. **Plastic PVC film.** Film/flexible packaging made from chlorinated plastics. Includes Saran wrap, many shower curtains
31. **Other film plastic.** All other plastic bags and flexible plastic film including garbage bags, plastic strapping, and other flexible plastic items. Any plastic bag used as a garbage bag goes here. Does not include PVC plastic film.

### ***OTHER ORGANIC WASTES***

“Organic” used in the “carbon-containing” (or burnable) sense.

*Yard Debris natural vegetative material:*

32. **Grass clippings.** Grass clippings and leaves can be weighed together, and the weight allocated by estimate to grass vs. leaves/weeds. Grass does not include sod (goes soil/dirt/sand).
33. **Leaves/weeds.** Herbaceous plant material excluding grass clippings
34. **Small prunings less than 2" diameter.** Natural woody material from trees, plants, and shrubs. Could be chipped with a small chipper for home composting.

35. **Large prunings more than 2" in diameter.** This category is composed of trees and large branches greater than 2" diameter and small stumps/roots less than 1' in diameter and less than 100 pounds. Not easily home-composted due to its size, weight and composition.
36. **Stumps.** Stumps too large to be ground by most commercial composters due to size, without use of special stump-splitting devices (greater than 1' diameter or 100 pounds).

*Wood manufactured wooden lumber and other items (excluding sawdust):*

37. **Reusable dimensional lumber:** Unpainted dimensional lumber at least 1.5" thick by 3.5" wide, and at least 4 feet long, which is clean (nails and minimal fasteners OK, with more allowed in larger pieces) and not rotted or damaged, and without other materials being firmly attached such as wallboard. Also includes at least half-sheets of plywood at least 3/8 inch thick in good condition.
38. **Other untreated lumber 1 foot or larger.** Exceeds 1 foot in length regardless of diameter. Unfinished or unpainted dimensional lumber or wood, including plywood and unpainted oriented strand board used for construction or resulting from building demolition. Excludes cedar shakes, shingles, reusable dimensional lumber
39. **Other untreated lumber less than 1 foot.**
40. **Clean "hogged fuel" wood 1 foot and larger in at least one dimension.** Includes particleboard, medium density fiberboard, any plywood with a fiber/resin overlay (such as is common for concrete forms) cedar shakes and shingles and other cedar lumber, compressed sawdust wafer board, Masonite (high-density fiberboard).
41. **Clean "hogged fuel" wood less than 1 foot.**
42. **Reusable dimensional lumber - painted.** Same as unpainted reusable dimensional lumber, but is painted (and not chemically treated).
43. **Other painted lumber 1 foot or larger.** Includes any lumber that is painted or primed, excluding furniture, chemically treated lumber, and mixed wood/materials (split from chemically treated lumber in 2000).
44. **Other painted lumber less than 1 foot.**
45. **Chemically treated lumber.** Pressure-treated or creosoted lumber or wood.
46. **Wood pallets and crates.** Dimension lumber material used as pallets, crates, and similar packaging lumber. Also includes wood/wire crates with thin slats, if not mixed with plastic and other materials.
47. **Wood furniture.** Includes desks, chairs, bureaus, and other furniture items made from wood.
48. **Other wood products.** Includes pencils, coat hangers, and other objects made of wood that are not used for packaging or construction or as furniture.
49. **Mixed wood/materials.** Mostly wood items combined with plastic, metal, or other materials. Excludes items that are better included in another category.

*Food*

50. **Food waste.** Food trimmings, coffee grounds, bones, spoiled or otherwise discarded food. In the Metro area, most samples were split into the following 6 subcategories, but in Marion county and the rest of the state, food was measured as only a single category
51. **Non-packaged bakery goods (Metro-area only)**
52. **Packaged bakery goods (Metro-area only)**



- 53. **Non-packaged other vegetative food (Metro-area only)**
- 54. **Packaged other vegetative food (Metro-area only)**
- 55. **Non-packaged non-vegetative food (Metro-area only)**
- 56. **Packaged non-vegetative food (Metro-area only)**

### *Other Organics*

- 57. **Disposable diapers.** Disposable diapers, including fecal materials contained within. Cloth diapers are to be sorted under textiles.
- 58. **Other textiles.** Fabric materials including natural and man-made textile materials such as cottons, wools, silks, woven nylon, rayon, polyesters, and other materials. This category includes clothing, rags, curtains, and other fabric materials.
- 59. **Mixed textiles/materials.** Include textiles that have significant amounts of non-textile components, plus shoes, belts, and similar clothing articles that may have insignificant amount of textile material. Excludes vinyl (PVC) items.
- 60. **Carpet and rugs.** Includes fiber rug pads but does not include polyurethane foam carpet pad (rigid plastic product) or rubber padding (other rubber).
- 61. **Tires.** Whole or partial rubber tires casings, including bicycle tires.
- 62. **Other rubber.** Includes toys, inner tubes, rubber mats, rubber carpet padding.
- 63. **Asphalt shingles and tar roofing paper - recyclable.** "Recyclable" asphalt roofing includes tarpaper and regular 3-tab roofing architectural-grade composition shingles, and roll roofing..
- 64. **Asphalt shingles and tar roofing paper – nonrecyclable.** "Nonrecyclable" asphalt roofing includes such things as built-up asphalt roofing commonly used on flat-roofed commercial buildings.
- 65. **Furniture and furnishings.** Includes mixed-material reusable and non-reusable household items that are large such as chairs, tables, and mattresses. Excludes furniture made from a single material (all metal, all plastic, all wood).
- 66. **Paper composite ceiling tiles.**
- 67. **Compostable other organics.** Carbon-containing easily compostable wastes not otherwise categorized, including sawdust and organic fines.
- 68. **Non-compostable other organics.** Carbon-containing wastes not otherwise categorized including wax, linoleum, vacuum bags, charcoal, cigarette butts, hair, dryer lint, disposable hygiene products and dead animals.

## **GLASS**

### *Container Glass*

- 69. **Deposit beverage glass.** Oregon deposit beer, soft drink, carbonated water and juice. Does not include beer or soft drink from out-of-state.
- 70. **Clear non-deposit beverage glass.** All clear non-deposit beverage glass, including broken glass identified as non-deposit beverage glass. Includes wine bottles, true wine cooler bottles, liquor bottles, juice bottles, and other non-deposit glass beverage containers.
- 71. **Colored non-deposit beverage glass.** Same as above, except includes green, brown, and other colored glass.

72. **Other clear container glass.** Includes clear (non-pigmented) glass jars, ketchup/mustard bottles, baby food jars, pickle jars and mayonnaise jars, medicine and other non-beverage bottles, and other clear container glass that is not a beverage bottle.
73. **Other colored container glass.** Same as above, but for green, brown, and other colored glass.

#### *Window and Other Glass*

74. **Flat window glass.** Excludes auto glass and mirrors.
75. **Fluorescent light tubes.** Includes individual separate light tubes. Does not include light fixtures/ballasts. This is a new category as of 2002, formerly included under "other glass".
76. **Compact fluorescent lights.** This includes small fluorescent fixtures that are sold as complete units, with both the ballast and tube attached. Does not include regular (full-sized) ballasts commonly used with full-sized fluorescent tubes.
77. **Other nonrecyclable glass.** This category includes products such as light bulbs, glass plates and cups, auto and cooking ware glass and mirrors, but excluding ceramics. This glass is not accepted by glass beverage container manufacturers for recycling, although some can be recycled into other uses. Excludes fiberglass insulation.

#### *METALS (and Appliances)*

78. **Deposit aluminum beverage cans.** Oregon Deposit beer, soft drink, carbonated water and juice.
79. **Other aluminum beverage Cans.** No Oregon deposit. Includes carbonated drinks from other states, juice, coffee, tea, water.
80. **Other aluminum containers and foil.** Aluminum pet food cans, foil-formed trays/containers, and foil.
81. **Other aluminum 8 inches and larger** in at least one dimension. All other aluminum materials including furniture, house siding, cookware, and scrap.
82. **Other aluminum less than 8 inches.**
83. **Steel/bimetal deposit beverage cans.** Oregon deposit, usually imported beer (rare - none encountered).
84. **Steel/bimetal other beverage cans.** No Oregon deposit.
85. **Tinned cans.** Predominantly steel cans (some with tin or enamel coatings) used to hold food, and non-food items. (Prior to 2005 food and non-food tin cans were measured separately.)
86. **Other non-ferrous metals - 8 inches or larger** in at least one dimension. Metals that are not materials derived from iron, including copper, brass, bronze, lead, pewter, zinc, "stainless steel", and other metals to which a magnet will not adhere. Includes recyclable insulated copper and aluminum wire. Metals that are significantly contaminated are not included.
87. **Other non-ferrous metals smaller than 8 inches.**
88. **Other ferrous metals 8 inches or larger** in at least one dimension. Ferrous and alloyed ferrous scrap materials derived from iron, including household, industrial and commercial products not containing significant contaminants. This category includes scrap iron and steel to which a magnet adheres. Includes all-steel furniture such as bed frames. Does not include appliances, food cans, or other ferrous metal items listed elsewhere.
89. **Other ferrous metal smaller than 8 inches.**

90. **White goods.** This category is composed of discarded stoves, washer, dryers, refrigerators and other large household appliances.
91. **Oil filters.** Used oil filters. (Moved here from HHW category.)
92. **Empty or non-hazardous aerosol cans.** Note - aerosol cans still containing hazardous materials such as paint are included in the "hazardous materials" categories.
93. **Mixed ferrous/non-ferrous 8 inches and larger** in at least one dimension. Items that are mainly metal, but a mixture of ferrous and non-ferrous, such as electric motors, old lawnmowers, small gas engines.
94. **Mixed ferrous/non-ferrous less than 8 inches.**
95. **Mixed metals/materials.** Products with mixtures of metal and non-metal items, where the metal weight predominates but where the item would not be recyclable with scrap metal. Generally, if an item is at least 70% ferrous metal or 50% copper or aluminum, it should be classified in one of the recyclable metal categories, not here.

### *Computers, Brown Goods, Other Small Appliances*

96. **Computers CRT monitors.** This category includes only cathode ray tube type computer monitors, and does not include liquid crystal or other flat monitors or computer laptops.
97. **Other computer equipment.** Includes computers and their related components (hardware), such as printers, modems, scanners, flat monitors, laptop computers, and their parts. Excludes cathode ray tube monitors.
98. **TVs and other cathode ray tube electronics.** Does not include computer monitors or flat-screen TVs.
99. **Other "brown goods".** Other small appliances with significant electronic components, such as radios, microwaves, stereos, and telephones. Does not include computer equipment or any electronics consisting primarily of cathode ray tubes.
100. **Non-electronic small appliances.** Includes fans, hair blowers, can openers, kitchen blenders, and shop tools. These may contain small electronic components such as digital readouts and controls, and often will have electric motors, but do not have significant amounts of circuit-board electronics.

### *OTHER INORGANICS*

101. **Large concrete and rock.** The size of ½ standard 8" brick or larger
102. **Small concrete and rock.** Less than ½ brick size.
103. **Large brick.** The size of ½ brick or larger.
104. **Small brick.** Less than ½ brick size.
105. **Soil, dirt, sand.** Includes sod.
106. **Pet litter, animal feces.**
107. **New gypsum wallboard.** Unpainted scrap and excess gypsum wallboard from new construction or remodeling.
108. **Old gypsum wallboard.** Old painted or other demolition gypsum wallboard.
109. **Fiberglass insulation.**

- 110. Other inorganics.** Includes plaster, ash, ceramics, china, and porcelain. Does not include items that contain significant amounts of carbon.
- 111. Medical waste.** Includes syringes, tubing, gauze, blood-containing, and similar materials, including urine-filled roadside bottles). Bags and containers with medical waste are not sorted further. Thus, other non-medical waste is weighed as medical waste if it is in a bag or container with other apparent medical waste.

***HAZARDOUS MATERIALS (see Additional Component Information)***

- 112. Lead-acid batteries.** Only the large batteries from vehicles, boats. Does not include SSLAs (small sealed lead-acid batteries) sometimes used in camcorders and other electronic equipment.
- 113. Dry-cell batteries.** Includes regular alkaline, NiCad, lithium, and similar batteries, and SSLAs (changed from previous studies). Includes rechargeable flashlights.
- 114. Latex paint.** All water-based architectural paints and stains. Includes dried paint in cans.
- 115. Oil-based paints.** All oil-based architectural paints and stains. Includes dried paint in cans.
- 116. Motor oil.** Includes drain oil, transmission fluid and similar petroleum hydraulic oils
- 117. Other flammables.** Thinners, solvents, fuels (diesel, gasoline, kerosene, lighter fluid), flammable/combustible adhesives, sealants, and strippers, flammable furniture polish, nail polish, flammable hair spray, oil-based hobby paints. Does not include oil-based architectural paints.
- 118. Pesticides/herbicides.** Chemical products designed/intended to kill plants and/or animals, including fertilizers that contain pesticides, such as "Weed & Feed". Includes mothballs. Does not include fertilizers without pesticides, or antimicrobial cleaners.
- 119. Corrosive cleaners.** Any cleaning product with the words "corrosive" or "caustic" or other evidence of strong acid or base content. Could include pool and spa chemicals, household cleaners and disinfectants, oven cleaner, drain cleaner, tarnish remover, strippers, floor and carpet cleaners, etc.
- 120. Asbestos. (None identified and sorted in the 2005/06 study)**
- 121. Mercury-containing items.** Includes mercury thermometers, thermostats, dairy manometers. None encountered and identified in the 2005/06 study.
- 122. Live ammunition and explosives.** Unused bullets and fireworks. Includes Dynamite and C-4.
- 123. Compressed gas cylinders.** Includes all intact gas cylinders (even helium). Cylinders that are cut in half or have a hole and thus are clearly empty are put in "other ferrous scrap metal" instead of here.
- 124. Other hazardous chemicals.** Includes only chemicals that show hazardous characteristics other than those specified above. Includes acids and bases that are not cleaners, corrosive water-based paint strippers, toxic substances, oxidizers, liquid bleach, antifreeze, brake fluid, equipment hydraulic fluid. Includes prescription drugs. Does not include non-hazardous chemicals such as detergents, vegetable oils, or non-hazardous inorganic salts (such as Epsom salt), fertilizers that do not contain pesticides, water-based adhesives and sealants (such as latex caulk), water-based paints (other than architectural paints) such as tempera and water colors, bacterial or enzyme-type drain cleaners.
- 125. Unknown hazardous.** Unlabelled chemicals believed to be hazardous but not identifiable

## BEVERAGE CATEGORIES

1. **Beer.** Any malt beverage or alcoholic beverage that would be required to carry a 5-cent refund value if sold in Oregon. Includes malt coolers and hard lemonade for those brands that require a deposit.
2. **Soft Drink.** Any non-alcoholic, non-malt-based beverage that would be required to carry a 5-cent refund value if sold in Oregon. Certain carbonated sports drinks, waters, and juices are included in this category since they have deposits.
3. **Liquor.** Distilled alcoholic spirits (no deposit required)
4. **Juice/Tea/Sports/Coffee.** Includes non-alcoholic beverages included in the list that are not carbonated and do not have a deposit when sold in Oregon. Juice includes both fruit and vegetable juices.
5. **Wine.** Includes wine and champagne. Alcoholic. (Non-alcoholic wine would go under "juice"). Does not include distilled liquor or malt beverages.
6. **Wine coolers.** Now very rare. Excludes malt coolers.
7. **Water.** Still or plain water only. Does not include carbonated or mineral waters that are required in Oregon to carry a deposit
8. **Milk.** Beverage containing dairy where milk is the main ingredient. Includes egg nog. Does not include cream or half-and-half as these are not ready-to-drink beverages. Does not include soy milk or rice milk as these are not dairy products.
9. **Other.** Includes soy milk, rice milk, diet beverage meal drinks such as slim-fast.

## Additional Component Information

### ***POLYVINYL CHLORIDE (PVC) - also including CPVC and PVDC***

Items containing PVC are commonly found in construction materials, medical disposables, household items, toys, packaging, clothing, office supplies, automotive, and hardware. The items below often contain PVC, but many can also be made with substitute materials:

***Construction:*** pipe, fittings and valves for water and sewer; siding; window frames; gutters and downspouts; weather stripping; mobile home skirting; flooring; fences and arbors; vinyl wallpaper; ducting; wire insulation and jacketing; conduit fixtures; faucet handles; doors; carpet backing; anti-corrosive liners; goal posts for football fields; athletic mats.

***Medical disposables:*** protective clothing, goggles and gloves; bags and tubing; catheters; cushioning products; dialysis equipment; inflatable splints; inhalation masks; IV containers and components; lab ware; surgical wire jacketing; thermal blankets; valves.

***Household items:*** shower curtains; venation blinds; waste baskets; garden hoses; artificial Christmas trees and greenery; furniture; imitation leather; gramophone records known as vinyl records.

***Toys:*** Phthalates are added to PVC to create soft and flexible toys for younger children such as pacifiers, teething rings, bathtub toys, rattles and squeeze toys—Pooh Bathtub Pal, Teletubbies, Pony Luv - to name a few. Includes pre-2000 Barbie dolls and other Mattel brand toys; inflatable toys; novelties.

Packaging: blister and clamshell packing for hardware items and pharmaceuticals; insert trays for boxed cookies and candies; candy bar wrappers; cling film used for wrapping meats and produce; "Saran wrap" (prior to recent reformulation); bottles; microwavable containers; wrap to 'tamper-proof' medications; Yiu Wing decorative shopping bags with handles.

Clothing: shop aprons; raingear; footwear and boots; imitation leather.

Office supplies: credit cards; pens; notebook covers; floppy discs; computer keyboards and mouse.

Automotive: seats; dashboards; truck bed liners; "Gaska" foam with or without adhesive; traffic cones.

Hardware: casings for power tools.

To identify PVC, look for the number 3 inside the triple recyclable arrows with a 'v' below and/or a 'smile' or 'slash' mark. The item may have "PVC", "CPVC", or "PVDC" stamped on it, as seen on plastic pipe. The examples above may be used as a guide to help identify the material. Films are difficult to identify out in the field since many are not marked. Flame testing can be performed on suspect material when suitable work conditions can be established. Generally, this is not an available option during fieldwork, as virtually all facilities forbid open flame.

## ***IDENTIFYING HAZARDOUS MATERIAL***

The labels of products which may contain dangerous material use key words like:

*flammable*  
*combustible*  
*corrosive*  
*irritant*  
*inhalation hazard*  
*contact hazard*  
*poison*  
*explosive*  
*reactive*  
*toxic*  
*radioactive*

They may show cautionary symbols, such as the "skull and crossbones", "Mister Yuk", or other universal symbols of warning.

Products packaged for home use in the U.S. are generally not required to warn of potential chemical hazards. When packaged for commercial distribution (used by business and industry), the same product must disclose the chemical hazards contained within, if any.

If a chemical can readily burn and can become a fire hazard, it should say so on the label.

Transportation regulations are the main reason for this. A flammable liquid has a flash point of 141°F (60.5°C) or lower, and will ignite more readily than a combustible liquid, which has a flash point between 141°F and 200°F (93°C).

Non-hazardous products often use water, rather than oil, alcohol, or a chemical solvent as their base. This normally renders them non-flammable. Water-based products may be labeled to "protect from freezing" or "clean up with soap and water".

However, water is also the vehicle for a vast number of products containing dangerous chemicals. Instructions to wear gloves or a mask may indicate the presence of hazardous chemicals, as may precautions to protect surrounding surfaces or vegetation.