

### 3.4: WASTE

---

Waste is a philosophical concept, because we determine, somewhat arbitrarily, when a solution or a substance has become waste. Once you no longer have a use for a chemical, it becomes a 'waste' that must be properly disposed of.

You might argue that this is a flawed concept (pouring 20 mL of NaCl-solution into a beaker, for example, does not change it from said solution to waste), but we employ this waste policy to ensure that we never contaminate any of the stock solutions, or samples.

In the PSU organic chemistry labs, we have three distinct types of waste containers:

*Organic waste:* Anything organic goes in this waste container, including organic solvents, solids that are left over from reactions or analyses, products obtained, organic extraction solvents and so on.

*Aqueous waste:* All aqueous solution used or obtained are poured in this waste container. You might be tempted to pour it straight in the drain, but the solutions could have been in contact with organic material. Let us for example say that you wash an organic extract with a saturated NaCl solution (brine), and you drain it out. This has been in contact with organic solvent and material, and even if we consider a relatively low solubility, the aqueous solution will still contain some organic molecules.

*Solid waste:* Solids, such as drying agents, are disposed of in these jars, but so are TLC plates, and any paper tissues that have been in contact with your fume hood.

Obviously we provide these waste containers as part of our safe laboratory hygiene practices, and therefore we wish to train our students in the proper disposal of chemicals, but you might ask, "What are the implications of not following these procedures?"

Let's look at the alternative.

As we have covered earlier, most organic chemicals have a number of safety hazards associated with them, either immediate, long-term, or both. Failing to dispose of these chemicals properly might create health hazards for the workers who unknowingly come into contact with these chemicals. Also, many chemicals that might seem relatively safe in a lab environment, are bio-accumulated by other organisms. These chemicals can produce disastrous effects for when they enter the environment beyond the lab. Aquatic organisms are especially vulnerable, and many organic chemicals have harmful toxicity with long lasting effects for these organisms.

The handling and disposal of chemicals is therefore not only an important aspect of the day-to-day work in the lab, but also for the environment, ecology, and the workers and other organisms that surround us.

---

This page titled [3.4: WASTE](#) is shared under a [CC BY-NC 4.0](#) license and was authored, remixed, and/or curated by [Alexander Sandtorv](#) ([PDX Open publishing initiative](#)) via [source content](#) that was edited to the style and standards of the LibreTexts platform.