



### What's the Story on Oil Spills?

#### When we talk about oil spills, how much oil are we talking about?

Quite a lot:

- The United States uses about 700 million gallons of oil every day.
- The world uses nearly 3 billion gallons each day.
- The largest spill in the United States so far was the *Exxon Valdez* spill into Prince William Sound, Alaska in March 1989. An oil tanker ran aground to cause this spill of almost 11 million gallons of crude oil. While this was a big spill, it was actually only a small fraction--less than 2 percent--of what the United States uses in 1 day!

These big numbers are hard to relate to everyday life, so let's make some comparisons. To better understand how much 11 million gallons of oil is, check the table below. It shows how many familiar rooms or buildings would be filled up by the approximate amount of oil spilled from the *Exxon Valdez*. For example, that oil would have filled up 9 school gyms or 430 classrooms.

Total Volume	Gallons	Gyms	Houses	Classrooms	Living Rooms
<i>Exxon Valdez</i> Oil Spill	10,800,000	9	108	430	797
School Gymnasium (50' * 50' * 65')	1,274,163	1	13	51	94
Average House (40' * 40' * 8')	100,365	0.1	1	4	7
Average Classroom (20' * 20' * 8')	25,091	0.02	0.25	1	2
Average Living Room (12' * 18' * 8')	13,549	0.01	0.125	0.5	1

#### What do we use all this oil for?

You may not be aware of all the ways we use oil. We use it

- to fuel our cars, trucks, and buses, and to heat our houses.
- to lubricate machinery large and small, such as bicycles or printing presses.
- to make the asphalt we use to pave our roads.
- to make plastics, such as the toys we play with and the portable radios or CD players we listen to.
- to make medicines, ink, fertilizers, pesticides, paints, varnishes, and electricity.

#### How do spills happen?

Oil spills into rivers, bays, and the ocean are caused by accidents involving tankers, barges, pipelines, refineries, and storage facilities, usually while the oil is being transported to us, its users (as in the photo at right, which shows a supertanker, the *Amoco Cadiz*, sinking off the coast of France in 1978).

Spills can be caused by:

- people making mistakes or being careless.
- equipment breaking down.
- natural disasters such as hurricanes.
- deliberate acts by terrorists, countries at war, vandals, or illegal dumpers.



#### Then what happens?

Oil floats on salt water (the ocean) and usually floats on fresh water (rivers and lakes). Very heavy oil can sometimes sink in fresh water, but this happens very rarely. Oil usually spreads out rapidly across the water surface to form a thin layer that we call an oil slick. As the spreading process continues, the layer becomes thinner and thinner, finally becoming a very thin layer called a sheen, which often looks like a rainbow. (You may have seen sheens on roads or parking lots after a rain.)

Depending on the circumstances, oil spills can be very harmful to marine birds and mammals, and also can harm fish and shellfish. You may have seen dramatic pictures of oiled birds and sea otters that have been affected by oil spills. Oil destroys the insulating ability of fur-bearing mammals, such as sea otters, and the water-repelling abilities of a bird's feathers, thus exposing these creatures to the harsh elements. Many birds and animals also ingest (swallow) oil when they try to clean themselves, which can poison them. Depending on just where and when a spill happens, from just a few up to hundreds or thousands of birds and mammals can be killed or injured.

Once oil has spilled, any of various local, state, and federal government agencies as well as volunteer organizations may respond to the incident, depending on who's needed. People may use any of the following kinds of tools to clean up spilled oil:

- booms, which are floating barriers to oil (for example, a big boom may be placed around a tanker that is leaking oil, to collect the oil).
- skimmers, which are boats that skim spilled oil from the water surface.
- sorbents, which are big sponges used to absorb oil.
- chemical dispersants and biological agents, which break down the oil into its chemical constituents.
- in-situ burning, which is a method of burning freshly-spilled oil, usually while it's floating on the water.
- washing oil off beaches with either high-pressure or low-pressure hoses.
- vacuum trucks, which can vacuum spilled oil off of beaches or the water surface.
- shovels and road equipment, which are sometimes used to pick up oil or move oiled beach sand and gravel down to where it can be cleaned by being tumbled around in the waves.

Which methods and tools people choose depends on the circumstances of each event: the weather, the type and amount of oil spilled, how far away from shore the oil has spilled, whether or not people live in the area, what kinds of bird and animal habitats are in the area, and other factors. Different cleanup methods work on different types of beaches and with different kinds of oil. For example, road equipment works very well on sand beaches, but can't be used in marshes or on beaches with big boulders or cobble (rounded stones that are larger than pebbles, but smaller than boulders).

People also may set up stations where they can clean and rehabilitate wildlife. Sometimes, people may decide not to respond at all to a spill, because in some cases, responding isn't helpful or even adds to the damage from the spill.



#### Who takes care of the problem?

In the United States, depending on where the spill occurs, either the U.S. Coast Guard or the U.S. Environmental Protection Agency takes charge of the spill response. They, in turn, often call on other agencies (NOAA and the Fish and Wildlife Service are often called) for help and information.

The goal of new federal regulations is to prevent oil spills from happening. People who cause oil spills now must pay severe penalties, and the regulations also call for safer vessel design in the hopes of avoiding future spills. In the U.S., people who respond to oil spills must practice by conducting training drills, and people who manage vessels and facilities that store or transport oil must develop plans explaining how they would respond to a spill, so that they can respond effectively to a spill if they need to.

#### What about the rest of us?

Because oil and oil products in the environment can cause harm, we need to prevent problems when we can. For example, by avoiding dumping oil or oily waste into the sewer or garbage, we avoid polluting the environment we live

in. Sometimes, we can find ways to avoid using oil in the first place: for example, we can bicycle, walk, or take the bus rather than taking a car to some places we need to go. When we use less oil, less needs to be transported, and there's a lower risk of future oil spills. We should understand that it is because we rely on oil that we run the risk of oil spills. That means that all of us share both the responsibility for creating the problem of oil spills and the responsibility for finding ways to solve the problem.

#### References

Some of the information on this page came from the following linked source. Additionally, we used various files and reports from the NOAA OR&R Response Reference Center in Seattle, Washington.

- [Oil, Water and Chocolate Mousse](#) 1994. Ottawa, Ontario: Environment Canada. [leaves OR&R site]
- [Exxon Valdez Oil Spill](#) This page gathers together all of the *Exxon Valdez*-related information on the OR&R site.



First published on May 2, 2005, and last revised on October 26, 2008.