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Contents

About The Oil DROP

The Oil DROP is an informal journal, produced twice a year by EPA's Oil Program Center. The goal of the Oil DROP is to attract a broad audience, including concerned citizens and environmental groups, on current developments in environmental news related to the Oil Spill Program. The Oil DROP covers oil spills in the United States and throughout the world, with an emphasis on the effects these spills have on wildlife and ecosystems. The Oil DROP is available on the Oil Program homepage at *www.epa.gov/oilspill*.

Galapagos Islands Oil Spill

Courtesy of Reuters

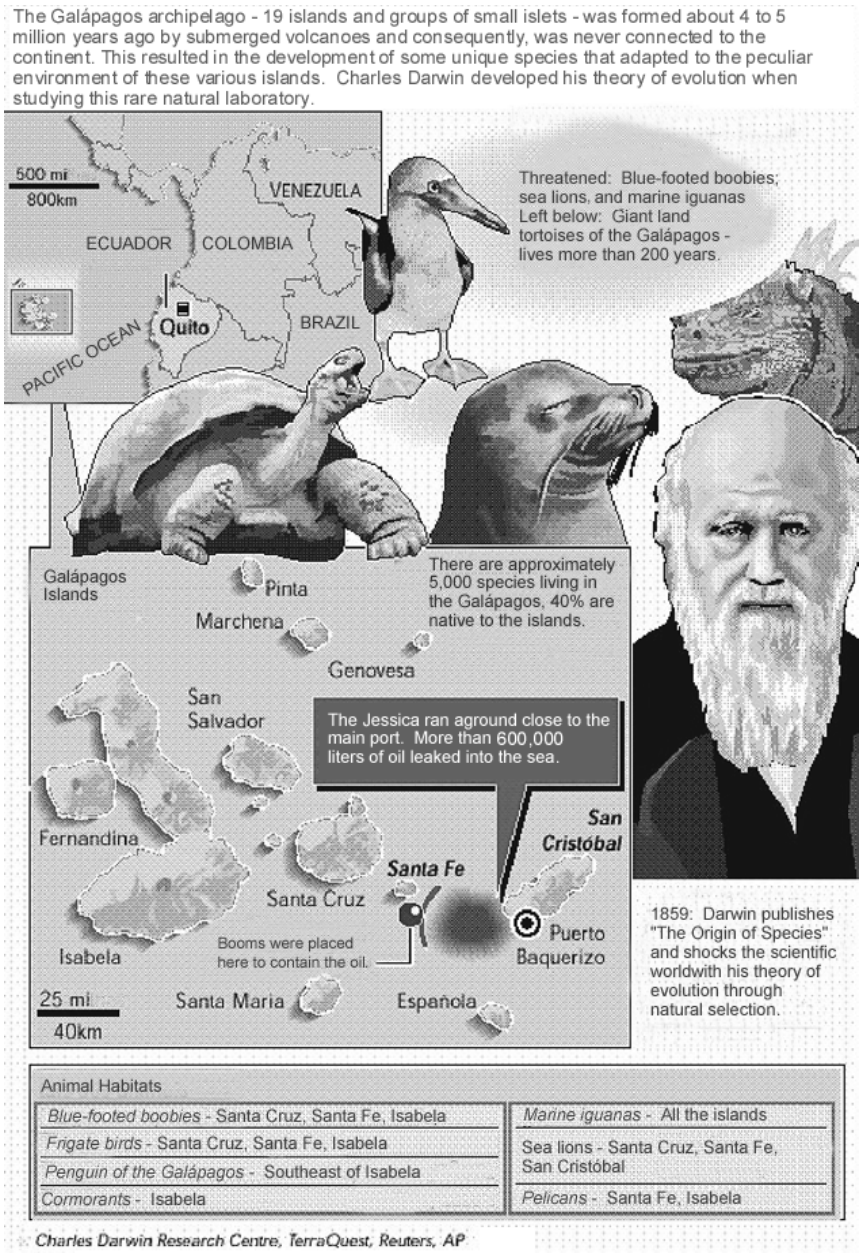
On January 16, 2001, an oil vessel, the Ecuadorean-registered *Jessica,* ran aground on the easternmost island of San Cristobal in Ecuador's Galapagos Islands. The *Jessica* was on its way to deliver 240,000 gallons of diesel and bunker fuel to a private tour boat operator and Petro-commercial, which provides the islands with fuel.

The accident, reported to be caused by a navigational error by the crew, tore three holes in the hull of the 835-ton *Jessica*.

Courtesy of Reuters

Ecuadorian Environment Minister Rodolfo Rendon reported that 60,000 gallons were recovered from the damaged vessel, but not before 170,000 gallons had seeped out of the ship's hull. The U.S. Coast Guard (USCG), who arrived to assist in the response, was able to remove an additional 10,000 gallons from the ship on January 22, 2001.

The primary concern regarding this spill was the catastrophic affects it could cause to the ecosystems of the Galapagos Islands. The Galapagos are made up of 19 islands and groups of small islets, containing many unique species which have evolved in relative isolation in this distinctive environment. Charles Darwin developed his theory of evolution while



would transfer more of the remaining oil from the unstable *Jessica* to the water or expand the spill even further away to neighboring islands.

Close to 50 animals were rescued by crews from the Galapagos National Park, which acted as the care center for the injured animals. A dozen sea lions were coated with oil and four pelicans have died. There has not been an estimate as to how the tropical fish of these waters have been affected. Local fisherman, who earn their livelihood in the waters off the Galapagos, helped with the rescue and clean-up efforts by scooping the oil in buckets from the surface of the water.

A British Broadcasting Corporation (BBC) report stated that charges will be brought against the oil company responsible for the *Jessica*. Admiral Gonzalo Vega, director of the agency that regulates Ecuador's shipping, reported to the press that Tarquino Arevalo, the master of the ship, and 12 crew members had been detained in San Cristobal, but had not been officially arrested. The Ecuadorian government has filed a lawsuit against Arevalo and requested a prison sentence.

studying the species of the Galapagos. There are approximately 5,000 species living in the Galapagos, 40 percent of which are native to the islands. Some of the native species include the threatened blue-footed boobies, sea lions, marine iguanas, and giant land tortoises, that live for more than 200 years.

Strong swells and currents swept most of the oil away and have kept the impact on wildlife at a minimum. Much of the diesel fuel was spread as far as 40 miles from the ship and has evaporated. The bunker oil stayed closer to the ship, between six to ten miles from the port. There was considerable fear that sea currents

While the situation in the Galapagos was critical, control and mitigation operations kept the effects of the spill at a minimum. A long process of monitoring will be necessary to determine what the long-term effects of the spill will be on small sea life, such as algae and sea urchins, which do not always show immediate signs of damage. Environmental groups say that directing navigational routes away from the islands would add two days travel time at most, but shipping companies have been reluctant to accept the extra cost involved. However, this measure may be necessary to prevent another spill from happening in the waters of the already fragile Galapagos Islands.

EPA Retains Gasoline Additive Rules

California is caught up in a difficult decision of what to use as an additive to its gasoline to reduce emissions, as required under the 1990 Clean Air Act Amendments. California Governor Gray Davis must choose between using either controversial methyl tertiary butyl ether (MTBE) or Midwest-produced ethanol to make cleaner burning fuel.

MTBE is an inexpensive additive that has caused considerable controversy in recent months. It is a known groundwater contaminant, and has polluted California groundwater and lakes at thousands of sites in the state and nationwide. MTBE had become so troublesome to the state that Davis ordered its use to be banned in California by December 31, 2002.

Ethanol is a fuel made from corn. However, it is much more costly gallon-for-gallon than MTBE. The California Energy Commission estimates that gas prices could increase 6 to 7 cents a gallon if ethanol must be mixed into California gas – a cost to motorists of up to a billion dollars annually.

Midwestern farmers find this conundrum a cause for celebration. "With all these new ethanol plants coming online, the demand is going to have to grow with supply," said Wayne Newton, president of an Iowa-based ethanol cooperative. "All of us are being encouraged to expand production because of the potential for the California market."

Sufficient studies exist to prove that oil companies can make gasoline that meets air standards without using either additive, say opponents to the gas additive rule. This finding has caused Davis and California Senator Diane Feinstein to petition EPA for a waiver from the rule. However, the change from the Clinton to the Bush Administration left the petition unaddressed. As a results, the gas additive rule has been retained, causing California to struggle with a politically explosive dilemma.

The new administration may make California's decision easier. Ann Veneman, U.S. Agriculture Secretary, reported in January that, "Bush has made clear his interest in ethanol and other alternative fuels." Corn growers and environmental groups are hopeful for it.

Fire Boom and Fast Water Containment Technology Tests at Ohmsett Test Basin

The OHMSETT (Oil & Hazardous Materials Simulated Environmental Test Tank) facility in Leonardo, New Jersey is the premiere oil spill response test facility. During 2000, the U.S. Navy, the U.S. Minerals Management Service (MMS), and the U.S. Coast Guard partnered with private industry at OHMSETT to put a variety of new oil spill response technologies to the test.

OHMSETT, which is maintained and operated by MMS, is the only facility where full oil spill response equipment testing, research, and training can be conducted with oil under controlled conditions, including fire and wave simulations.

In October 2000, MMS tested the survivability and the effectiveness of response equipment used during in-situ burns, a technique prescribed in oil spill contingency plans for blowouts and pipeline releases. OHMSETT's underwater propane bubbling system allows for controlled fire simulation and testing of fire boom tolerance to heat at close proximity, without producing soot. The evaluations conducted aided in the preparation of a new American Society for Testing and Materials (ASTM) standard guide for in-situ burning.

In August 2000, the U.S. Navy and research partners conducted fire resistant boom and boom blanket tests in generated waves, set to simulate realistic towing

forces over the propane bubbler.

The U.S. Coast Guard Research and Development Center, in pursuit of better technology to contain and clean up oil spills in fast currents, tested a variety of fast water oil spill recovery systems at OHMSETT in 2000. Fast water systems evaluated include a dynamic inclined plane skimmer, a series of diversion booms, a floating oil sorbent recovery system, flow diverters, and a rope mop skim.

Oiled Wildlife Care and Education Center

February 20, 2001, marked the grand opening of the newest facility in the Oiled Wildlife Care Network (OWCN), the San Francisco Bay Oiled Wildlife Care and Education Center. This $2.7 million bird-rescue center is managed by University of California Davis' Wildlife Health Center, which is part of the School of Veterinary Medicine. OWCN is funded by the California Department of Fish and Game's Office of Spill Prevention and Response.

The San Francisco Bay Oiled Wildlife Care and Education Center can care for up to 1,000 birds that may have inhaled, swallowed, or been coated with oil. The 10,000 foot facility was custom designed in collaboration with veterinarians and oil spill response personnel with expertise in dealing with oiled wildlife. Dr. Jonna Mazet, UC Davis veterinarian and OWCN director, said she is relieved that the new San Francisco regional center was finished before it was needed. The center has specialized areas for holding, washing, drying, isolation and recovery, food preparation, X-rays, and necropsy. There are also 15 pools, which are each 15 feet wide, and 3 large aviaries for recovering birds.

When the center is not caring for animals affected by an oil emergency, it will be used as an education center. Veterinarians, staff, and volunteers will use the center for oil spill rehabilitation training and to care for some birds with non-oil related injuries. The center is also the new International Bird Rescue Research Center Headquarters.

Tours and volunteer opportunities at the San Francisco Bay Oiled Wildlife Care and Education Center may be arranged by calling the International Bird Research Center at (707) 207-0380.

Volunteers at San Francisco's oiled wildlife center care for an oiled bird.

Petrobras Oil Spill

On February 16, 2001, a ruptured pipeline spilled 13,200 gallons of diesel fuel into the Atlantic Ocean near the City of Curitiba in Brazil's Serra do Mar region. Over 200 people worked to contain the lightweight fuel that formed a slick stretching seven miles along the coastline of Parana and contaminated the natural reserve of Mata Atlantica and five rivers.

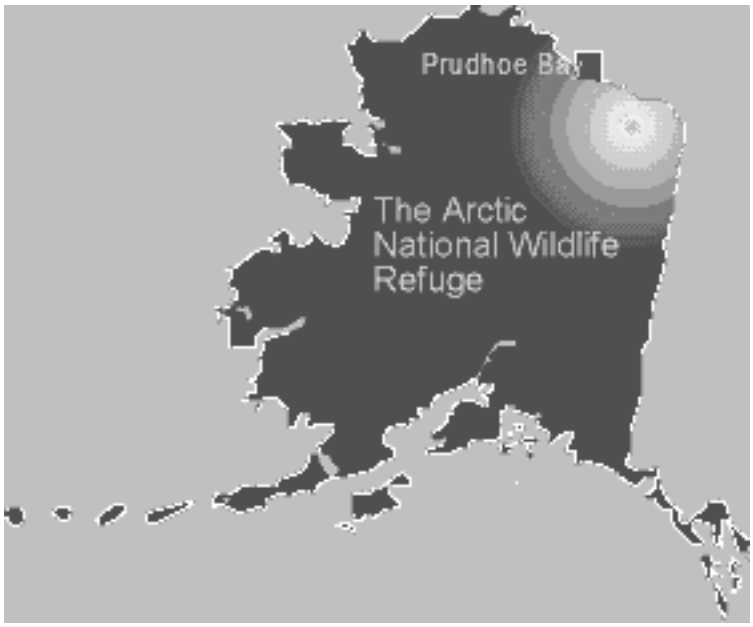
Environmental officials in Brazil's southern Parana State fined the state oil giant, Petrobras, $75 million for this minor fuel spill that was viewed as a repeat offense. Last July, Petrobras was fined $28 million after a ruptured pipeline spilled 1.1 million gallons of oil into the Iguacu River. In January 2000, Petrobras was fined $52,000 after an aging pipeline leaked 345,000 gallons of petroleum product into Rio de Janeiro's Guanabara Bay.

Brazil's oil market regulator, the National Petroleum Agency (NPA), ordered that Petrobras was only to continue use of the pipeline after it presented solid proof and results indicating that the pipeline is safe. The pipeline is capable of transporting 46,000 barrels of petroleum products a day.

Petrobras has recently launched a program to clean up Rio beaches and is implementing a $1 billion plan over the next three years to make its pipelines safer and establish environmental protection centers to respond to accidents.

Drilling in Alaska's Arctic National Wildlife Refuge

Senate Republican leaders introduced an energy bill on February 26, 2001, that would allow oil drilling in Alaska's Arctic National Wildlife Refuge (ANWR). According to Republican congressional leaders and Bush Administration officials, the pressure to pass this legislation in Congress will mount this summer if the energy crisis in California spreads to other states. The proposed bill includes many of the energy goals



set forth in President Bush's campaign, such as increased domestic energy production, regulatory reform for electricity, and oil and gas exploration in the ANWR. The bill also sets the goal of reducing U.S. oil imports to 50 percent. Currently 56 percent of the oil used in this country is imported. Parties and organizations joining in the controversy over drilling in the ANWR, a 19 million-acre territory in northern Alaska, include Republicans, Democrats, environmentalists, and oil companies. The two political parties agree on the need to address national energy policy, but differ greatly on how to proceed with new legislation.

While the United States may gain energy and economic benefits from drilling in the ANWR, there are numerous environmental drawbacks that are the chief concerns of the bill's opponents. Environmentalists fear that drilling will not only ruin the pristine condition of this territory, but that it will also endanger some of the 130 species known to migrate in this area. Canada's environment minister, David Anderson, states that the Arctic Refuge was originally preserved for calving use by a caribou herd that crosses the boundary between the United States and Canada. Canada created two national parks to protect areas used by the herd. Another conflict of interest surrounding the drilling comes from the Eskimo residents living in the refuge. Most of the Inupiat Eskimo residents, who own shares in the Arctic Slope Regional Corporation, support the drilling because it would benefit the corporation. The Inupiat's neighbors, the Neets'aii Gwicin, are strongly opposed to the drilling because their cultural tradition is tied to the caribou.

Speculation on how much oil is present in the ANWR has the scientific community at odds with the idea of drilling. The ANWR could be home to millions of barrels of oil; current estimates range from 3 to 11 million barrels. Some scientists believe that drilling would significantly disrupt the ecosystems in the ANWR, while others believe that technology has improved drastically over the history of oil operations and would cause little disturbance.

A scientific panel, convened by the National Research Council, has begun a study of the impact of oil and gas drilling in Alaska during the last 30 years. This 18-month, $1.5 million study will look at the different impacts of oil development, focusing on the biological, physical, social, and economic effects. The results of this study may provide solutions to the ongoing debate on whether or not the United States should begin drilling in the ANWR.

DOT Announces Final USA Rule

The U.S. Department of Transportation's (DOT) Office of Pipeline Safety announced stronger safety and environmental standards that may affect nearly 87 percent of federally-regulated hazardous liquid pipelines. The rule includes mandatory testing for pipelines transporting liquids through populated areas, unusually sensitive environmental areas (USAs), and waterways used to transport goods and supplies.

The rule was promulgated in response to DOT's belief that recent severe accidents could have been adverted if operators had better information available about their pipelines. Special attention is given in the rule to USAs, which are particularly vulnerable to environmental damage from a hazardous-liquid pipeline release. The rule requires that the results of the pipeline tests, once voluntary and now mandatory, be made

available for the government to review.

Commenting on the new rule and the nation's pipeline system, former U.S. Transportation Secretary Rodney Slater said, "As the system expands to meet our growing energy needs, we must employ all reasonable means to ensure that the people and environments near pipelines are better protected." The final USA rule, which responds to those needs, appears in the December 21, 2000, issue of the *Federal Register*.

Court Orders Coast Guard to Require Oil-Leak Detectors

A federal appeals court has ordered the U.S. Coast Guard (USCG) to require oil tankers to install devices to detect leaking oil. The three-judge appeals panel in Washington, D.C., unanimously held that Congress gave USCG a clear mandate to require the devices within one year of the passage of the Oil Pollution Act (OPA) of 1990. OPA is a package of spill prevention measures that was enacted in the wake of the disastrous Exxon Valdez spill as well as the Ashland Oil Company brittle fracture tank failure. "A nine-year delay is unreasonable given a clear one-year timeline," wrote Chief Judge Harry Edwards in his opinion written for the court.

The suit was filed by Bluewater Network and Ocean Advocates in response to a 1999 USCG announcement that it would not require oil tankers to install equipment that sounds an alarm when the oil lever or pressure drops in a cargo tank, indicating that some of the liquid has escaped. Such instruments would have alerted USCG inspectors immediately to the dangerous leak that developed in the tanker *Neptune Dorado* when it sailed into San Francisco in September 2000, according to Russell Long of Bluewater Network.

If the *Neptune Dorado* had installed leak detectors, Long said, Bay Area inspectors would have known just by looking at the instrument panel on the tanker's bridge that it had lost oil. The tanker spent two weeks in the Bay Area before it was found that more than 147,000 gallons of oil had leaked into the ship's ballast tanks, where it could have exploded.

Marine safety officers at Coast Guard Island in Alameda said the spill detection devices might have given them warning, but Commander Steven Boyle said the vessel's crew, who knew about the leak and lied to inspectors, could have easily tampered with the detection devices and hidden the problem.

"If they're bent on covering it up, they could fool the meter and therefore fool the inspector who checked the meter," Boyle said.

Long said detection devices could be designed with the ability to create an independent log of pressure and volume readings (to track any losses of oil) in order to prevent record tampering, but that manufacturers would have little incentive to design such devices until USCG requires tankers to use them.

According to the court record, USCG officials had previously concluded that the leak detection devices were insufficiently sensitive to alert crews to an oil leak before significant amounts of fuel had been released. They subsequently postponed the imposition of the rule until better devices could be developed. Bluewater Network and Ocean Advocates countered that some warning was better than none, and that the devices were ordered because USCG had a record of undetected spills on tankers operating in the dark or in rough weather.

In a recent report, USCG credited OPA enforcement with a 50 percent drop in the number of oil spills exceeding 10,000 gallons (compared to levels before 1991) and a 50 percent drop in the amount of oil spilled for every million gallons shipped in the United States.

The appeals court ordered USCG to promptly issue a rule ordering tankers to install leak detectors.

New Spill-Sentry System Introduced

The following announcement does not constitute EPA endorsement or EPA approval of the product described. It is intended only to notify the response community of newly available equipment.

Applied Microsystems LTD has recently announced the release of a new Spill-Sentry monitoring system for the detection of spilled hydrocarbon products. The system is designed to detect crude and petroleum-based products floating on water or in suspension near the surface of the water and to raise an alarm if a spill is detected.

Side-profile of the Spill-Sentry, a new oil detection technology

The Spill-Sentry system is composed of buoys, interconnect cables, and a base station. Sensing buoys detect the presence of oil floating on the water surface, or suspended in the top 5 cm (2 inches) of the water, at the buoys' location. A site survey is used to determine the best sites to place the buoys for adequate coverage. The system actually detects the oil by shining an ultraviolet light up to the surface from 5 cm below. If oil is present, it will fluoresce and radiate light at longer wavelengths than normal. This data is retrieved by the base station and compared to normal background levels by the Spill-Sentry software in order to determine an appropriate response. The Spill-Sentry uses a statistical approach to determine the level required to trigger an alarm. The software accumulates historical data from each buoy and computes the average and standard deviation for each fluorescence channel. Users can specify that new data must exceed the background level by a chosen number of standard deviations in order to trigger an alarm. The system can also utilize radio modems and solar paneling to communicate with the base station, if interconnect cables are not practical.

The Spill-Sentry base station collects information sent in from the buoy units. A minimum base system is composed of a computer, a computer telephone card, and the Spill-Sentry software. The software provides a visual display of any buoys that are being used as monitoring devices, and will indicate if the buoys have detected any leaks. Other items that may be necessary for the base station include an uninterruptible power supply for the computer, a power supply for the buoys, and a radio modem.

For more information on the Spill-Sentry system, contact Applied Microsystems LTD at 1-800-663-8721 or *www.appliedmicrosystems.com*.

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