

Princeton University does not operate a centralized shipping service. Hence, each employee is responsible for packaging, shipping and documenting biological and hazardous materials shipments.

There are strict regulations for shipping hazardous materials and dangerous goods. Improper shipment of these materials can result in monetary fines, penalties, and even jail time. A hazardous material or dangerous good is defined as, "articles or substances capable of posing a risk to health, safety, property or the environment." This definition covers a wide scope of materials.

The Department of Transportation (DOT) regulates the shipment of hazardous materials by ground. The International Air Transport Association (IATA) regulates the shipment of dangerous goods by air. These are similar regulations, as both regulations require the shipper to be trained and be able to correctly identify, pack, mark and label these shipments. In addition, the appropriate paperwork must accompany these shipments.

Individuals who improperly ship hazardous materials may be subject to criminal and civil penalties. Fines to the University can range from \$0 to

\$182,877 per civil violation and up to \$500,000 and 10 years in prison for criminal violations. Per the IATA regulations, a shipper must be trained and recertified every 2 years.

SHIPPING BIOLOGICAL MATERIALS

The rules for shipping biologicals are complex. EHS offers training for Biological Substances and for Dry-Ice shipping. These trainings are recommended for persons who need to ship biological materials: human blood, human or primate cell lines, preserved biologicals, microbial agents and genetically modified organisms (GMOs). In addition, these shipments may involve ethanol, formaldehyde, dry ice or liquid nitrogen which are all hazardous chemicals and have to be shipped as hazardous chemicals.

Dr. Butler, a professor at a university in Texas, worked on *Yersinia pestis* (plague). He transported vials containing plague to Tanzania on numerous occasions. One trip he was stopped and searched at customs and had to explain the vials. He said this was a common way researchers transport samples: V.I.P.—short for "vials-in-pocket". He was convicted of 12 counts of improper shipping. He lost his license to practice medicine, lost his position at the university, was given a 36-

month jail sentence, and a significant monetary fine.

SHIPPING CHEMICALS

The rules for shipping chemicals are also very intricate. EHS should evaluate and ship all chemical samples as necessary. Even small research samples are regulated. There are no exceptions. DOT regulations

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prohibit you from taking these materials on the dinky, or public transportation. There are requirements if you would like to drive these materials in your personal vehicle to another campus or location. DOT regulations even apply to bicyclists, however, they do not regulate "walkers."

TRAGIC CONSEQUENCES

There have been a number of accidents due to the improper shipping and labeling of hazardous materials. In 1996, a ValuJet plane crashed in the Florida Everglades and killed 110 people aboard. The cause of the accident was a fire started by improperly shipped



oxygen canisters in the cargo hold. Lithium batteries found in cell phones and laptops have been recently classified as dangerous goods, due to 2 recent shipping accidents.

In 2010, a UPS plane crashed in Dubai, killing both pilots because the plane had large amounts of consumer electronics on board. It is believed the lithium batteries stoked an intense fire. Prior to the crash, the pilots radioed that smoke was so dense in the cockpit they were unable to read their instruments or change radio frequencies. In 2006, a lithium battery fire broke out on a UPS cargo plane. The plane made an emergency landing in Philadelphia and no one was killed. However, it took emergency responders more than 4 hours to douse the fire.

When you need to ship a material that could pose a risk to health, safety, property or the environment, contact the Princeton University Office of Environmental Health and Safety at 609-258-5294 for assistance, and make sure that you are properly trained and understand the regulations.