

# Invention Detective

## Student Resource 3.1 (1 of 5 pages)

### **News Release: 1970, "Compact Fluorescent Lightbulbs – Safe, Economic Lighting of the Future!"**

General Electric engineer, Ed Hammers, invents a lightbulb that operates on 1/3 the energy of regular incandescent bulbs and lasts far longer! Fluorescent lights are ordinarily tube-shaped, but through trial and error, Hammer came up with a way to minimize losses without losing the bulb-like shape.



Curving the tubes into a bulb shape creates reflective light losses, meaning light that shines from one part of the tube gets deflected by a nearby spiral. What a great invention for today's economy!

### **News Release: 2011, 14 year old hospitalized from Light bulb "Mercury Poisoning"!**

Results have concluded that a 14-year-old boy acquired mercury poisoning from cleaning up broken fluorescent lightbulbs and breathing the mercury that escaped from the breakage. It is reported that this youth had multiple exposures to the mercury. Once inhaled, mercury vapor can damage the central nervous system, kidneys, and liver. The EPA warns everyone that "...Mercury has long been known to have toxic effects on humans and wildlife... Mercury is a toxic, persistent, bioaccumulative pollutant that affects the nervous system in harmful ways.

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### **News Release: 1961, "Development of Leak-Proof Storage Tanks"**

Kenning Nuclear Reservation, the largest producer of plutonium for nuclear weapons, announces the development of nuclear waste storage tanks touted to be "leakproof" for up to two thousand years. "The tanks," states Robert Lohr, spokesman for Kenning, "provide protection against physical stress and chemical stress during transportation, interim storage, and disposal." The key performance parameter is the resistance to environmental attack (chemical performance). Mechanical performance, thermal/neutronic performance, compatibility with other materials, fabricability, and previous experience, as well as cost, have also been taken into account with this new technology.

### **News Release: 1998, Nuclear Waste Seeping into Groundwater!**

For years, the Kenning Nuclear Reservation has produced plutonium for nuclear weapons. Although the plant stopped production in 1987, about 54 million gallons of radioactive waste are still stored at the site—and many of the 177 underground storage tanks are leaking. And now that almost a million gallons of waste has leaked from tanks and entered the ground water supply, the Department of Energy has admitted that it doesn't know how to clean up the mess.

The DOE once estimated that it would take 10,000 years for the waste to reach the groundwater, but in 1997, they announced that the wastes are already there.

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### **News Release: 1902, Welsbach & General Gas Mantle Company**

Welsbach and General Gas Mantle Company have just announced their newest innovation of the Gas Mantle. This new, improved mantle will make gas lamps glow brighter than ever before! It is estimated that Americans will use close to 40 million mantles per year to light their homes, offices, and streetlights. Welsbach and General Gas Mantle Company expect to produce as many as 250,000 per day.

### **News Release: 2010, EPA Discovers "forgotten" Radioactive Waste!**

Starting this week, the United States Environmental Protection Agency (EPA) will remove soil tainted with thorium and uranium from a section of a Gloucester City public park as a precautionary measure. The radioactive waste, which could be a potential health hazard to people who come in contact with it over long periods of time, may have been deposited in the park for use as fill. It has a half-life of 14 billion years. It was left by the Welsbach & General Gas Mantle Company, which processed an ore containing thorium for use in manufacturing gas lamp mantles in Gloucester City from the late 1890s to the early 1940s. The Agency will spend close to \$1 million to complete this action at the Welsbach/General Gas Mantle Contamination site.

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### **News Release: 1975, "Plastic Bags Gaining Speed!"**

American Bag Company declares plastic bag sales reach all-time high! The company estimates that by 2011, 500 billion plastic bags will be used on a yearly basis, by every consumer worldwide. These economical bags are cheap to manufacture, inexpensive for retailers, and easily discarded. One consumer quotes "I unpack my groceries, then toss them in the garbage. What could be easier? And they don't take up much room in my garbage can! Just think of the extra space at the landfills!"

### **News Release: 2011 Global Epidemic – Plague of the Plastic Bag!**

Reporter states, "They're everywhere! They accompany us home each time we shop. They swirl about our oceans, they cling to our trees, they drift down our city sidewalks, they adorn metal fences, they are consumed by animals. They are an urban tumbleweed, a flag of the consumer era." Scientists report that plastic bags have a life span up to a thousand years in a landfill. In the event they do break down, tiny, toxic particles remain that become part of the soil and water. For every bag, there's a cost. **California** environmentalists report that many plastic bags end up in the ocean and kill up to one million sea creatures every year, such as birds, whales, seals, sea turtles, and others. Moreover, it is estimated that 100,000 marine mammals die each year because of eating or being entangled in plastic.

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## Student Resource 3.1 (5 of 5 pages)

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Student Name: \_\_\_\_\_ Student Name: \_\_\_\_\_  
Student Name: \_\_\_\_\_ Student Name: \_\_\_\_\_

### News Release Report

The team leader has been given a card with a news release written on each side of the card. Read the older of the two releases to your team. Allow 5-10 minutes to discuss:

**The events and occurrences of the first news release** (What does it appear life was like, in terms of society, economy, politics, culture, etc.? Ask Mr. Squires or Google your decade.)

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**Why this invention was important?**

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Read the newer of the two releases to your team. Allow 5-10 minutes to discuss:

**The events and occurrences of the second news release** (What does it appear life was like, in terms of society, economy, politics, culture, etc.? Ask Mr. Squires or Google your decade.)

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**Issues and effects that resulted from the original invention/innovation.**

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**Do you think the people responsible knew what consequences could/would occur?**

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**What could have been done differently?**

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