



Massachusetts
Institute of
Technology

D-Lab

HAZARDOUS WASTE

26 October 2015



WHAT IS HAZARDOUS WASTE?

EPA

Hazardous waste is waste that is dangerous or potentially harmful to our health or the environment. Hazardous wastes can be liquids, solids, gases, or sludges. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes.

Environmental Protection Agency. Wastes – Hazardous Waste. <https://www.epa.gov/hw/learn-basics-hazardous-waste>

UN

Hazardous waste is waste that owing to its toxic, infectious, radioactive or flammable properties poses an actual or potential hazard to the health of humans, other living organisms, or the environment. Hazardous waste here refers to categories of waste to be controlled according to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Article 1 and Annex I). If data are not available according to the Basel Convention, amounts can be given according to national definitions.

Hazardous Waste Generation. United Nations Statistics Division. <http://unstats.un.org/unsd/environment/hazardous.htm>



SOURCES OF HAZARDOUS WASTE?

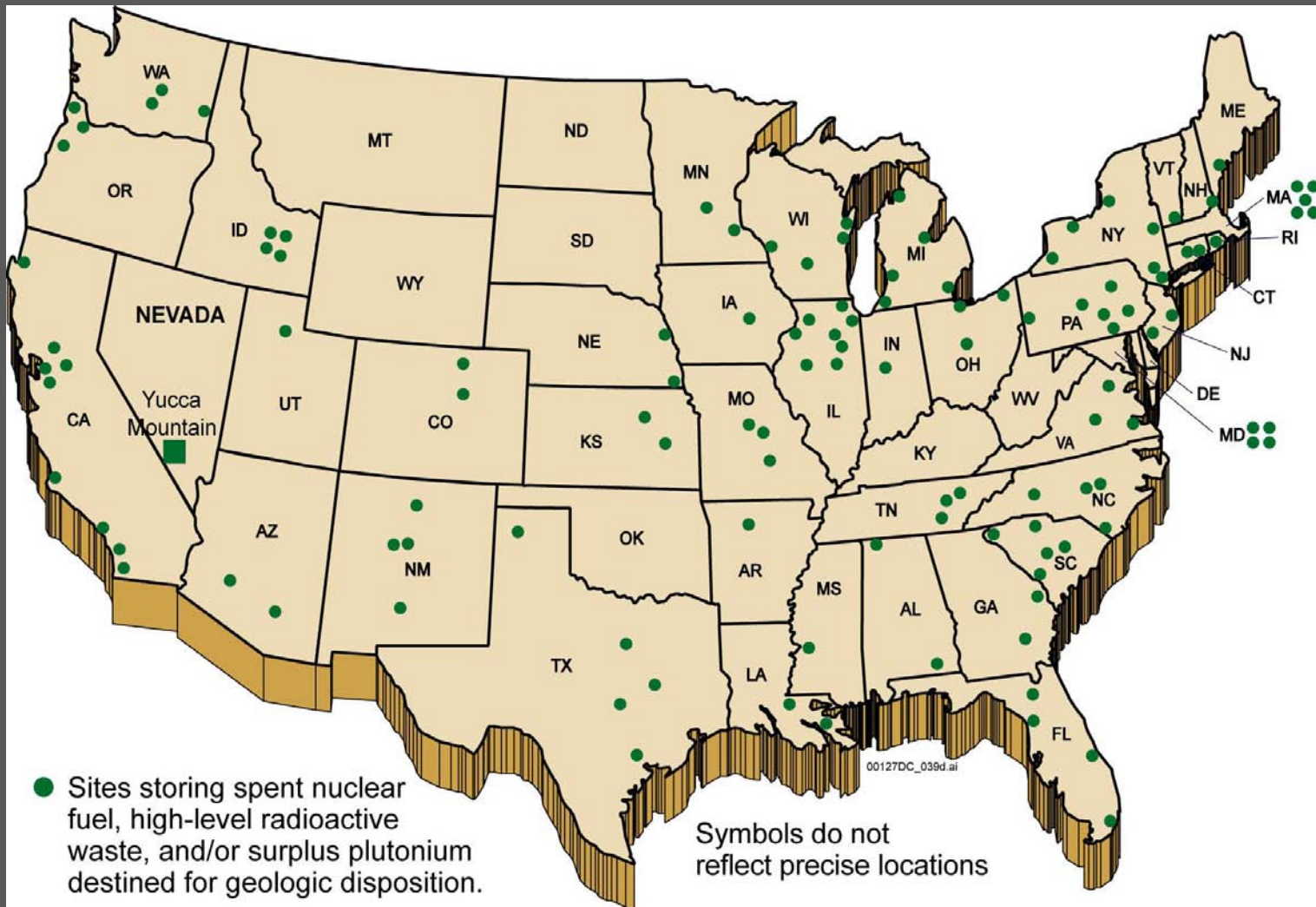


NUCLEAR

YUCCA MOUNTAIN, NEVADA

Courtesy of the [Nuclear Regulatory Commission](#) on Flickr. CC BY. Used with permission.

Nuclear Waste Sites in the US



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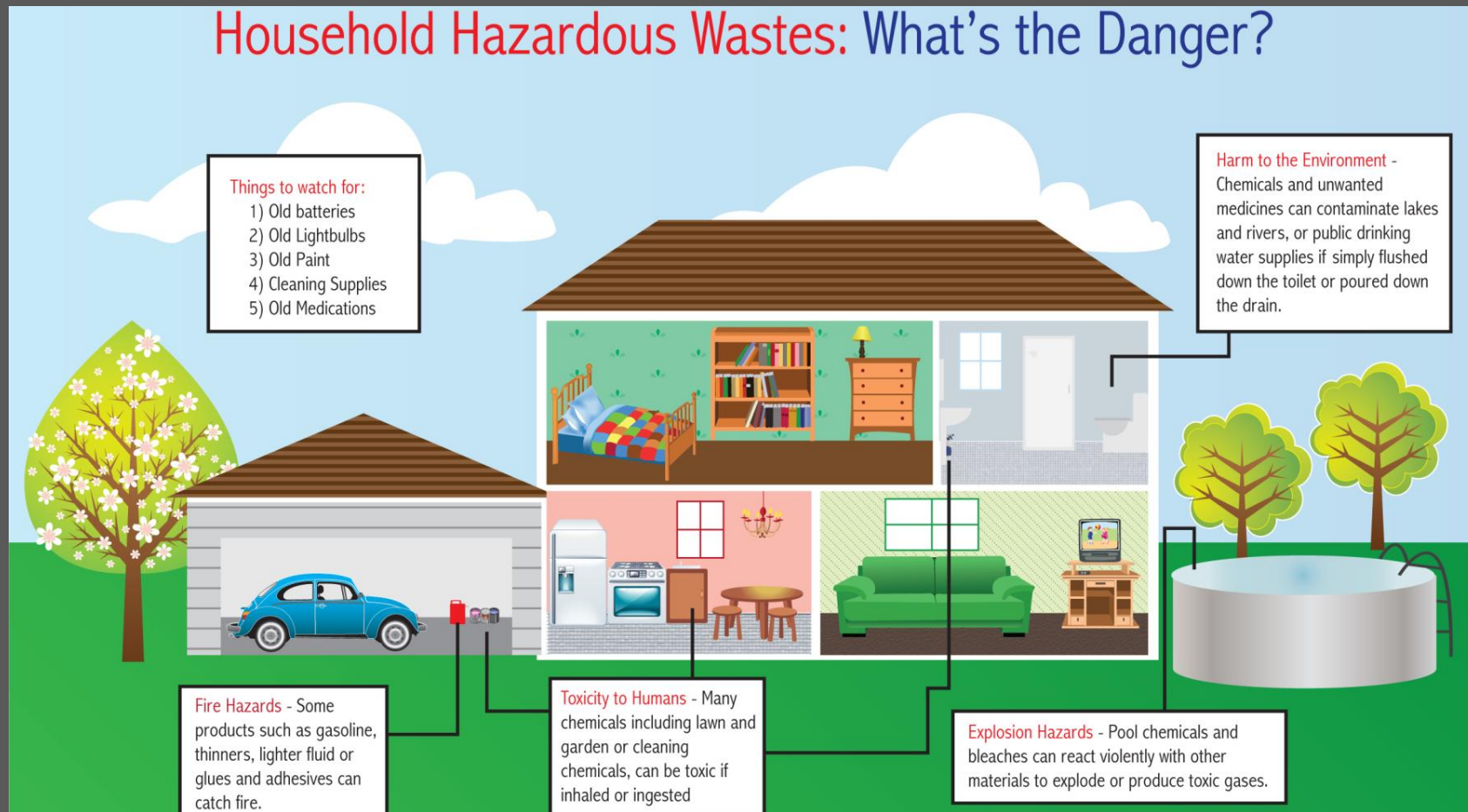
Industrial



Courtesy of [davint](#) on Flickr. CC BY.

Universal Wastes (HHW)

Household Hazardous Wastes: What's the Danger?



Courtesy of Kiley Eagleson and Heritage Environmental Services LLC. Used with permission.

Image from Heritage Environmental Services: <http://blog.heritage-enviro.com/Blog/bid/72261/Household-Hazardous-Wastes-What-s-the-Danger>

Medical Waste



Courtesy of [Benny Lin](#) on Flickr. CC-BY-NC Used with permission.

Construction Waste

- Asbestos insulation
- Lead paint
- Mercury-containing exit signs
- Dilbert comic: Asbestos

Electronic Waste



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“Where Does E-Waste End Up?” Greenpeace. 24 February 2009.

CATEGORIZATION & LEGISLATION

LEGISLATION (USA)



Courtesy of [Alachua County](#) on Flickr. CC BY. Used with permission.



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Valley of Drums, Kentucky (1979); Love Canal, NY (1976+)



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Characteristics



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Treatment + Disposal

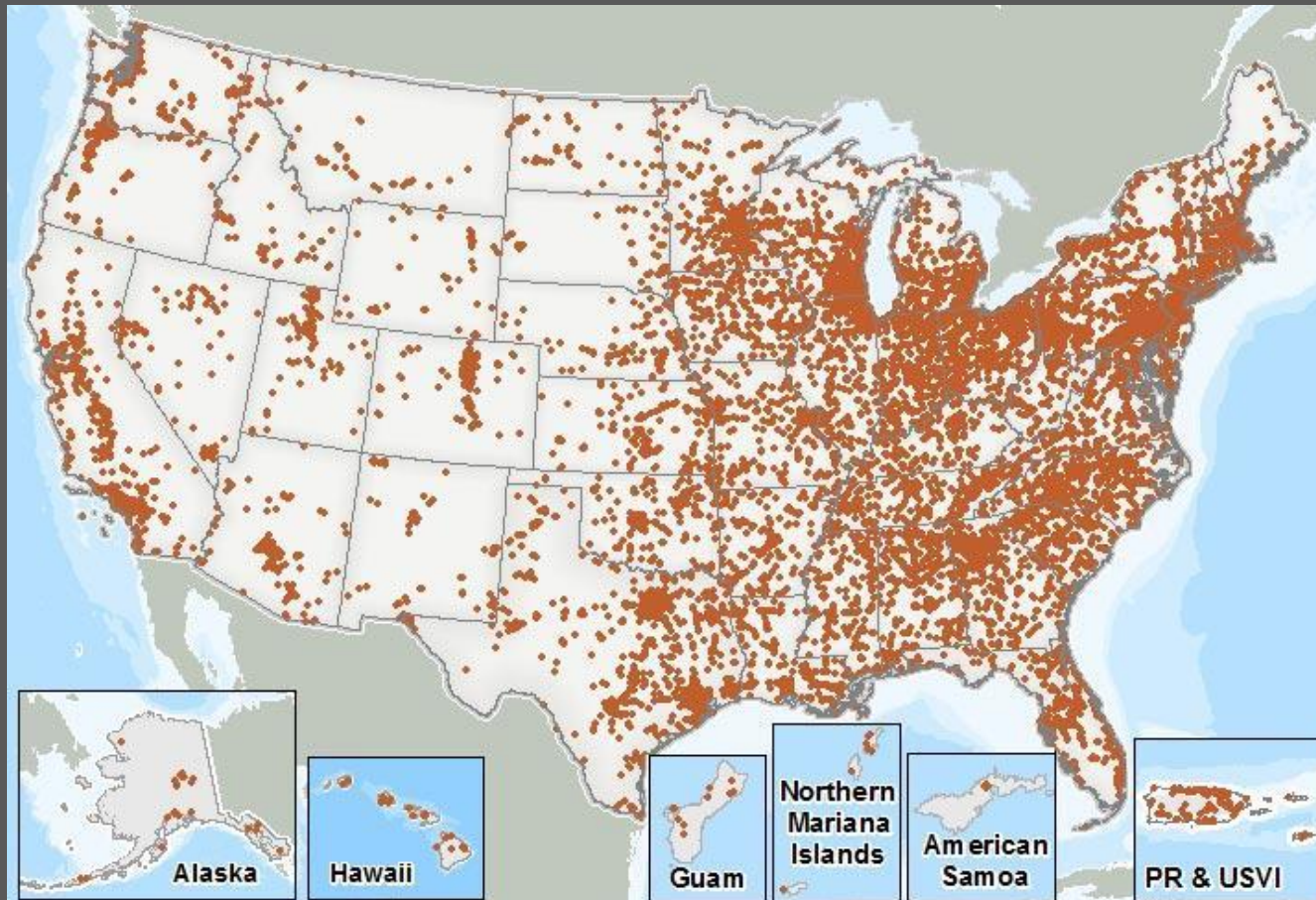
Treatment

- Aqueous Organic Treatment

Disposal

- Underground Injection
- Incineration
- Land Disposal

Toxics Release Industry (2013)

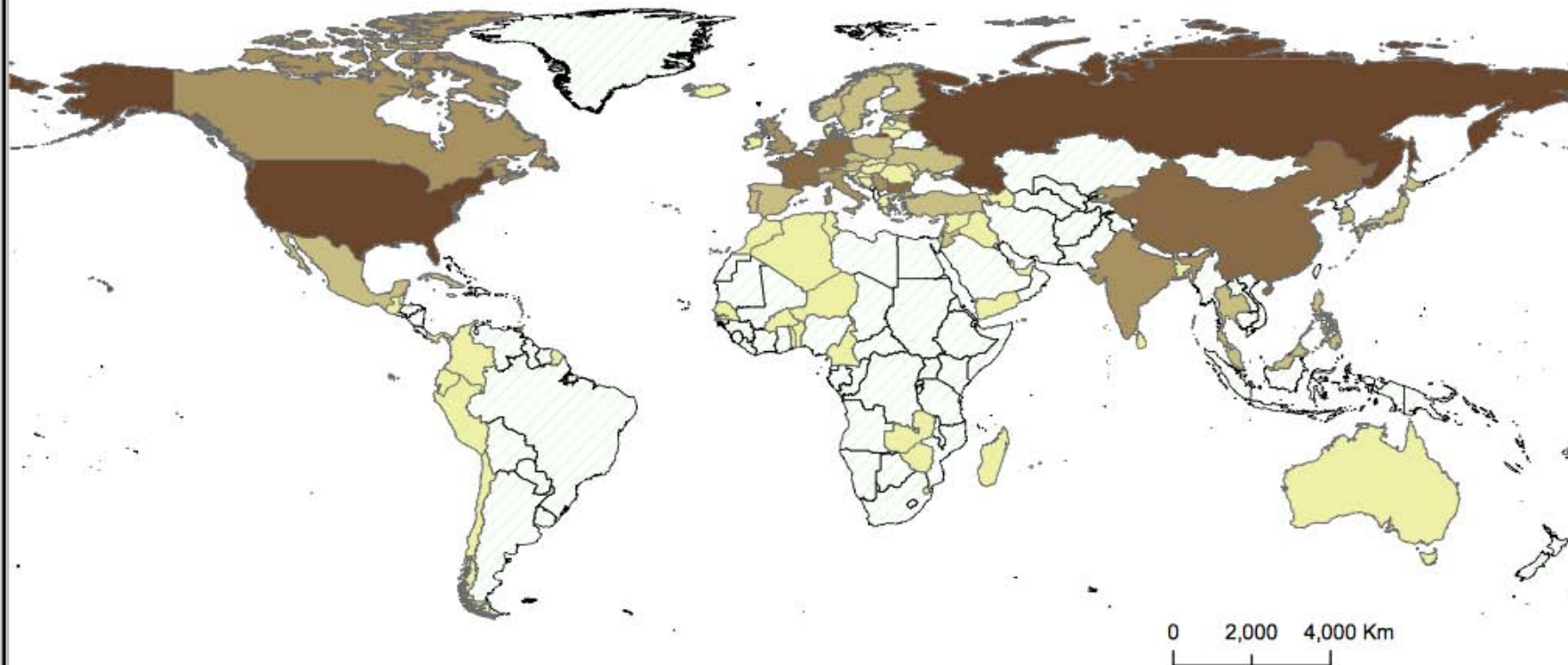


This image is in the public domain.

2013 TRI National Analysis: Introduction. USA Environmental Protection Agency. <http://www.epa.gov/toxics-release-inventory-tri-program/2013-tri-national-analysis-introduction>

Where is Hazardous Waste?

- Columbia University Superfund Research Program [Online Mapping Project](#)
- Wilson Peacock, Kathy. “[The Strange Saga of the Khian Sea](#).” Gale Cengage Learning. 6 October 2015.
 - Toxic incinerator ash of Philly (14,000 tons)
 - Sengeal, Sri Lanka, Honduras, etc.
 - Haiti – sold as topsoil fertilizer and partially dumped in the ocean



Units: 1000 tonnes

*Note that data correspond to the latest year available.



Data Source: UNSD
Map Source: UNGIWG

Last Update: March 2011
Map available at: <http://unstats.un.org/unsd/environment/qindicators>

From the Environmental Statistics Section of the United Nations Statistics Division,
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**Europe shipped to
Guinea Bissau (1988)
\$120m < \$150 GNP**

Waste Dumpers Turning to Africa. New York Times. <http://www.nytimes.com/1988/07/17/world/waste-dumpers-turning-to-west-africa.html?pagewanted=all>

\$2 – 3k/ton > \$2.50/ton

A few more examples complete the picture. West Africa also reported that **waste** disposal “is a \$12 billion a year business that annually deals with 300 million metric tonnes of toxic **waste** produced by 24 industrialized countries. It is its scale, combined with strong environmental lobby groups in developed countries, and the expense of proper **waste** management in coded sites, that makes dumping in the Third World an attractive proposition.”¹⁴ For instance, whereas it costs an average of \$2,000 to \$3,000 per ton to treat **waste** in industrial countries, the cost negotiated between Sesco, a Gibraltar-based company, and the government of Benin Republic was \$2.50 a ton.

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Westra, Laura, and Bill Lawson, eds. *Faces of environmental racism: Confronting issues of global justice*. Rowman & Littlefield Publishers, 2001.

BASEL CONVENTION: on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989)

What led to the rise of the Basel Convention?

- Many toxic disasters
- Rise of greater regulation from 1980s forward
- Countries were looking for places to ship their waste

What are the key objectives of the Basel Convention?

- to minimize the generation of hazardous wastes in terms of quantity and hazardousness
- to dispose of them as close to the source of generation as possible
- to reduce the movement of hazardous wastes

What categories of hazardous waste are covered by the Convention?

- toxic, poisonous, explosive, corrosive, flammable, eco-toxic and infectious

Predominantly focuses on movement between developed and developing countries, not between developing and developing countries

Parties to the Basel Convention [Interactive Map](#)



Courtesy of [Fairphone](#) on Flickr. CC BY-NC. Used with permission.

AGBOGBLOSHIE ACCRA, GHANA 2014

WATCH:
The Documentary Network.
“[Sodom and Gomorrah – Digital
Dumping Ground in Ghana.](#)” 10
May 2013. Youtube.

CASES!

China

Portugal

Israel

TAKEAWAYS?

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The Pollution Next Door – Duke University Superfund Research Center. / useful post on mapping tools for hazardous waste sites and cleanup. <http://sites.nicholas.duke.edu/superfund/the-pollution-next-door/>

Lepawsky, Josh, and Chris McNabb. 2010. “Mapping International Flows of Electronic Waste.” *The Canadian Geographer* 54 (2): 177–95. Click [here for paper](#).

Revkin, Andrew. “Love Canal and Its Mixed Legacy.” The New York Times. 25 Nov 2013. Accessed 25 Oct 2015. <http://www.nytimes.com/2013/11/25/booming/love-canal-and-its-mixed-legacy.html>

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