CHALLENGES AND OPPORTUNITIES IN MAPPING THE NORTH AMERICAN HAZARDOUS WASTE TRADE

Follow along at:

geography.wisc.edu/hazardouswaste/map

or

uwcart.github.io/waste/hmm

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NACIS 2016

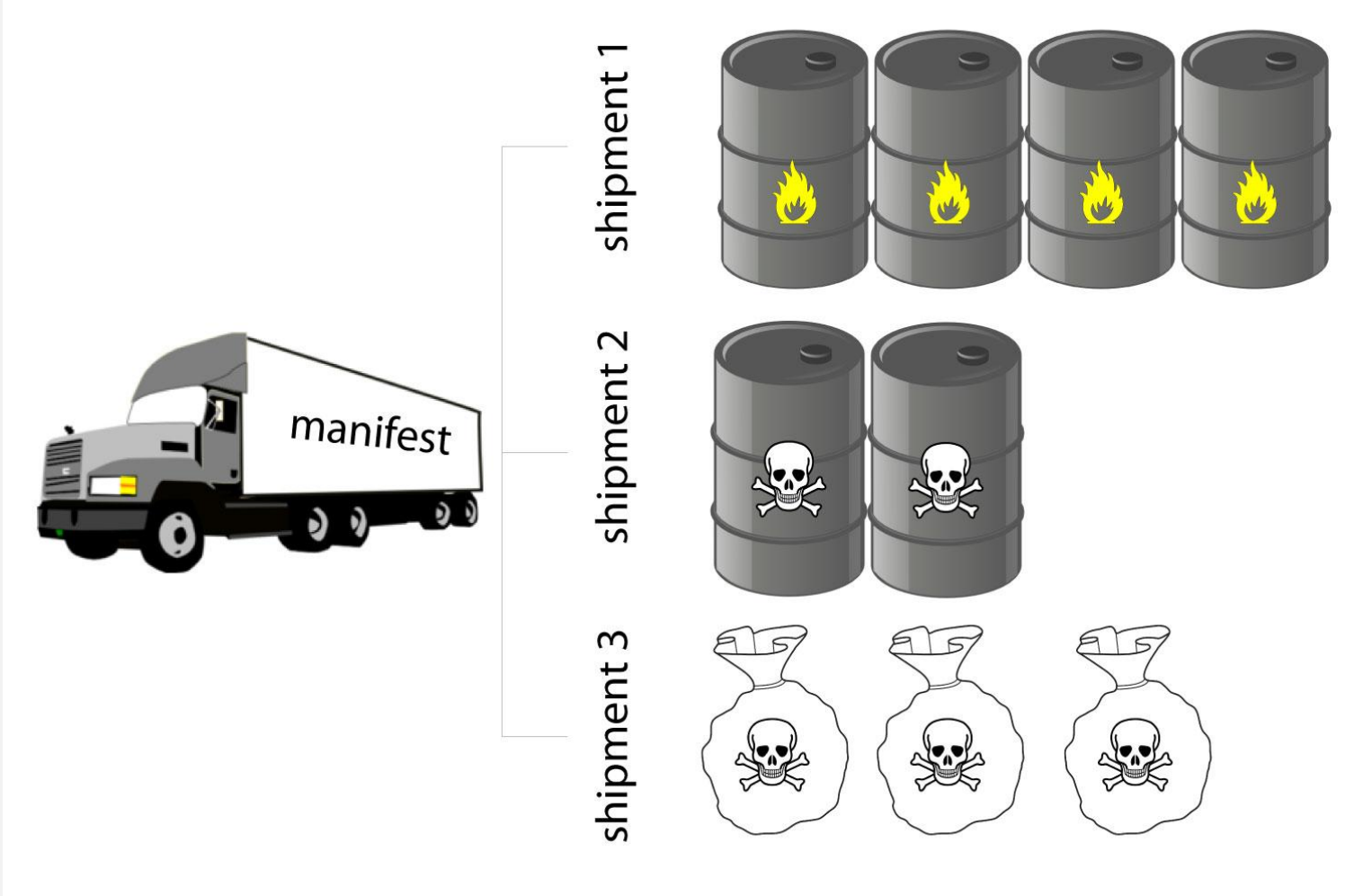
WHERE DOES WASTE GO?

THIS IS AN OPPORTUNITY…

BUT ALSO A CHALLENGE….

FOIA

971 pdfs
On average, 7 manifests each
For a total of over 18,000 shipments



Need Consent form

DL3799026 SC PPW 3/3/2011

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	~~RG8988~~ ARD069748192	~~2~~ 3	(800)483-3718	003896230 FLE

5. Generator's Name and Mailing Address
Clean Harbors Canada Inc
7842 Progress Way
Delta, BC V4G 1A4
Generator's Phone: (604)940-0894

Generator's Site Address (if different than mailing address)
AT: CLEAN H
309 Amer
El Dorado

6. Transporter 1 Company Name
Alchemist Transport Inc (USA)

2560 4T/11

U.S. EPA ID Number ~~MKR000039574~~ ~~FCCANADA~~

7. Transporter 2 Company Name
Clean Harbors Environmental Services

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Clean Harbors El Dorado LLC
309 American Circle
El Dorado, AR 71730
Facility's Phone: (870)863-7173

U.S. EPA ID Number
ARD069748192

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
	1 UN1391, WASTE ALKALI METAL DISPERSIONS, 4.3, PG I	001	DM	00097	P		D001	D003
X	2 UN1391, WASTE ALKALI METAL DISPERSIONS, 4.3, PG I	005	DF	02088	P		D001	D003
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1. EL-CH487251 ERG#138 1X55
2. EL-CH487251 ERG#138 5X85

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged,

GENERATOR

UN waste code
Waste description
Packing group
# of containers
Container type
Quantity
Quantity unit
EPA waste code
Exporter name and address
Manifest number
Importer EPA ID
Importer name and address

1	Foreign Exporter Name	Hazardous Waste Description	DOT/UN ID Code	DOT/UN ID Code description
6575	CLEAN HARBORS INC	WASTE CORROSIVE LIQUIDS, OXIDIZING, NOS (SULPHURIC ACID/POTASSIUM DICHF	UN3098	Oxidizing liquid, corrosive, n.o.s.
6576	CLEAN HARBORS INC	WASTE CORROSIVE LIQUID, ACIDIC, INORGANIC, NOS (CHROMIUM TRIOXIDE/SULPI	UN3264	Corrosive liquid, acidic, inorganic, n.c
6577	CLEAN HARBORS INC	WASTE HYPOCHLORITE SOLUTIONS (SODIUM HYPOCHLORITE)	UN1791	Hypochlorite solutions
6578	CLEAN HARBORS INC	WASTE HYPOCHLORITE SOLUTIONS (SODIUM HYPOCHLORITE)	UN1791	Hypochlorite solutions
6579	CLEAN HARBORS INC	WASTE NOT REGULATED BY TDG (WATER WITH TRACE IODINE)	UY2307	
6580	CLEAN HARBORS INC	WASTE FLAMMABLE LIQUID, TOXIC, CORROSIVE, NOS (HYDRAZINE/MORPHOLINE S	UN3286	Flammable liquid, toxic, corrosive, n.c
6581	CLEAN HARBORS INC	WASTE FLAMMABLE SOLIDS, ORGANIC, NOS (ALUMINUM PASTE)	UN1325	Flammable solids, organic, n.o.s.
6582	CLEAN HARBORS INC	WASTE CORROSIVE LIQUIDS, NOS (AMMONIUM HYDROXIDE SOLUTION)	UN1760	Corrosive liquids, n.o.s.
6583	CLEAN HARBORS INC	WASTE NON HAZARDOUS, NON DOT REGULATED MATERIAL (HEMOSIL)	AY2307	
6584	CLEAN HARBORS INC	WASTE ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE (F	UN3399	Organometallic substance, liquid, wat
6585	CLEAN HARBORS INC	WASTE CORROSIVE LIQUIDS, NOS (HYDROCHLORIC/SULPHURIC ACID MIX)	UN1760	Corrosive liquids, n.o.s.
6586	CLEAN HARBORS INC	WASTE CORROSIVE LIQUIDS, FLAMMABLE, NOS (DICYCLOLIODARANE)	UN2920	Corrosive liquids, flammable, n.o.s.
6587	CLEAN HARBORS INC	WASTE CORROSIVE LIQUIDS, TOXIC, NOS (HYDROFLUORIC/NITRIC ACID)	UN2922	Corrosive liquids, toxic, n.o.s.
6588	CLEAN HARBORS INC	WASTE PARAFORMALDEHYDE	UN2213	Paraformaldehyde
6589	CLEAN HARBORS INC	WASTE LITHIUM	UN1415	Lithium
6590	CLEAN HARBORS INC	WASTE NON HAZARDOUS, NON DOT REGULATED MATERIAL (SALICYLIC ACID)	AY2307	
6591	CLEAN HARBORS INC	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, NOS (SODIUM BORATE)	UN3077	Environmentally hazardous substanc
6592	CLEAN HARBORS INC	WASTE NON HAZARDOUS, NON DOT REGULATED MATERIAL (SODIUM PHOSPHATE	AY2307	
6593	CLEAN HARBORS INC	WASTE NON HAZARDOUS, NON DOT REGULATED MATERIAL (SODIUM CHLORIDE)	AY2307	
6594	CLEAN HARBORS INC	WASTE NON HAZARDOUS, NON DOT REGULATED MATERIAL (SODIUM CHLORIDE)	AY2307	
6595	CLEAN HARBORS INC	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, NOS (FLUORESCEN	UN3077	Environmentally hazardous substanc
6596	CLEAN HARBORS INC	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, NOS (FLUORESCEN	UN3077	Environmentally hazardous substanc
6597	CLEAN HARBORS INC	WASTE NON HAZARDOUS, NON DOT REGULATED MATERIAL (BORIC ACID)	AY2307	
6598	CLEAN HARBORS INC	WASTE NOT REGULATED BY TDG (DISODIUM EDETATE)	UY2307	
6599	CLEAN HARBORS INC	WASTE OXIDIZING SOLID, NOS (SODIUM NITRATE/SODIUM PERBORTE)	UN1479	Oxidizing solid, n.o.s.
6600	CLEAN HARBORS INC	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, NOS (FLUORESCEN	UN3077	Environmentally hazardous substanc
6601	CLEAN HARBORS INC	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, NOS (FLUORESCEN	UN3077	Environmentally hazardous substanc
6602	CLEAN HARBORS INC	WASTE NON HAZARDOUS, NON DOT REGULATED MATERIAL (BORIC ACID)	AY2307	

UNCERTAINTIES. DATA CAN BE:

- Inconsistent
  - Example: Company names spelled differently, e.g., AIR PRODUCTS & CHEMICALS and AIR PRODUCTS & CHEMICALS, INC
  - Solution: Standardize spellings in spreadsheet
- Variable
  - Example: Sometimes lead is liquid, sometimes lead is solid. Sometimes it's measured by weight, sometimes by volume.
  - Solution: In the mapping tool, allow users to disaggregate waste by type and measure.

UNCERTAINTIES. DATA CAN BE:

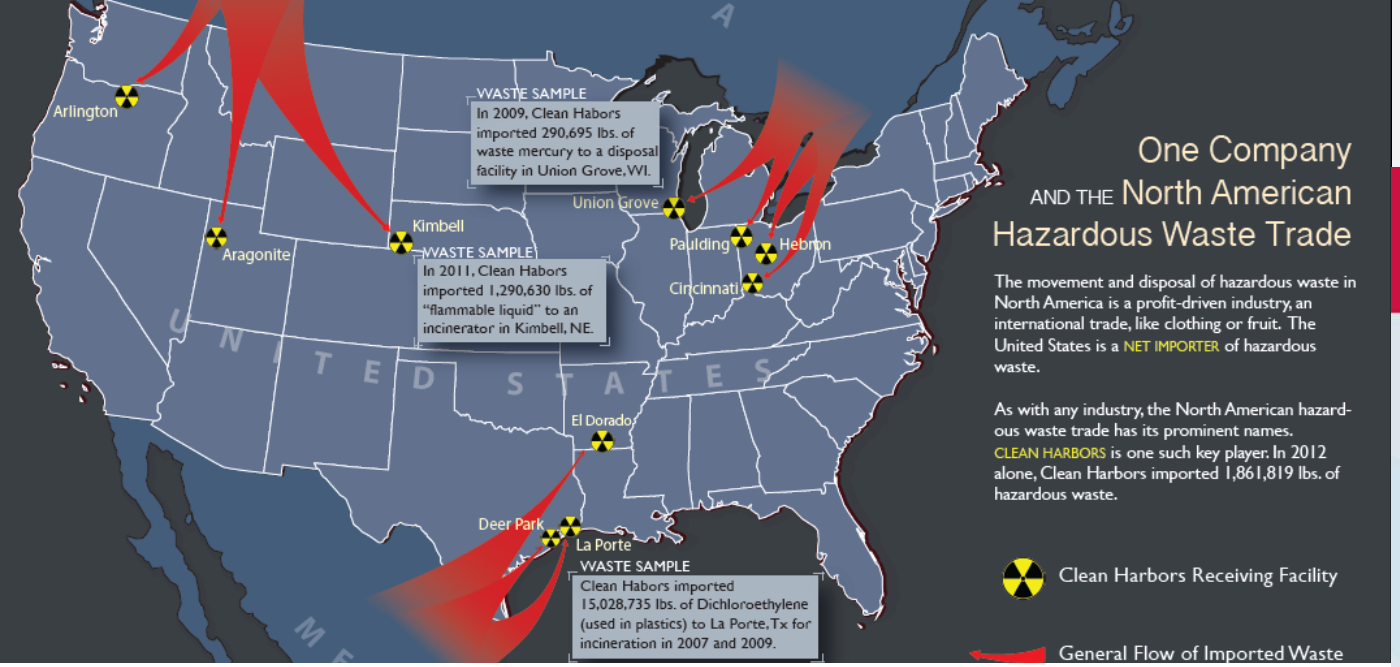
- **Ambiguous**
  - Example: Some waste described differently and listed under different categories, but appearing to be the exact thing:
    - WASTE CORROSIVE LIQUIDS, N.O.S. (SODIUM HYDROXIDE) - UN1760
    - WASTE CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (SODIUM HYDROXIDE) - UN3266
    - WASTE CAUSTIC ALKALI LIQUIDS, N.O.S. (SODIUM HYDROXIDE) - UN1719
  - Solution (in development): Use small multiples to indicate differences when waste types are differently classified
- **Missing**
  - Example: Some manifests lack information on the expected management method.

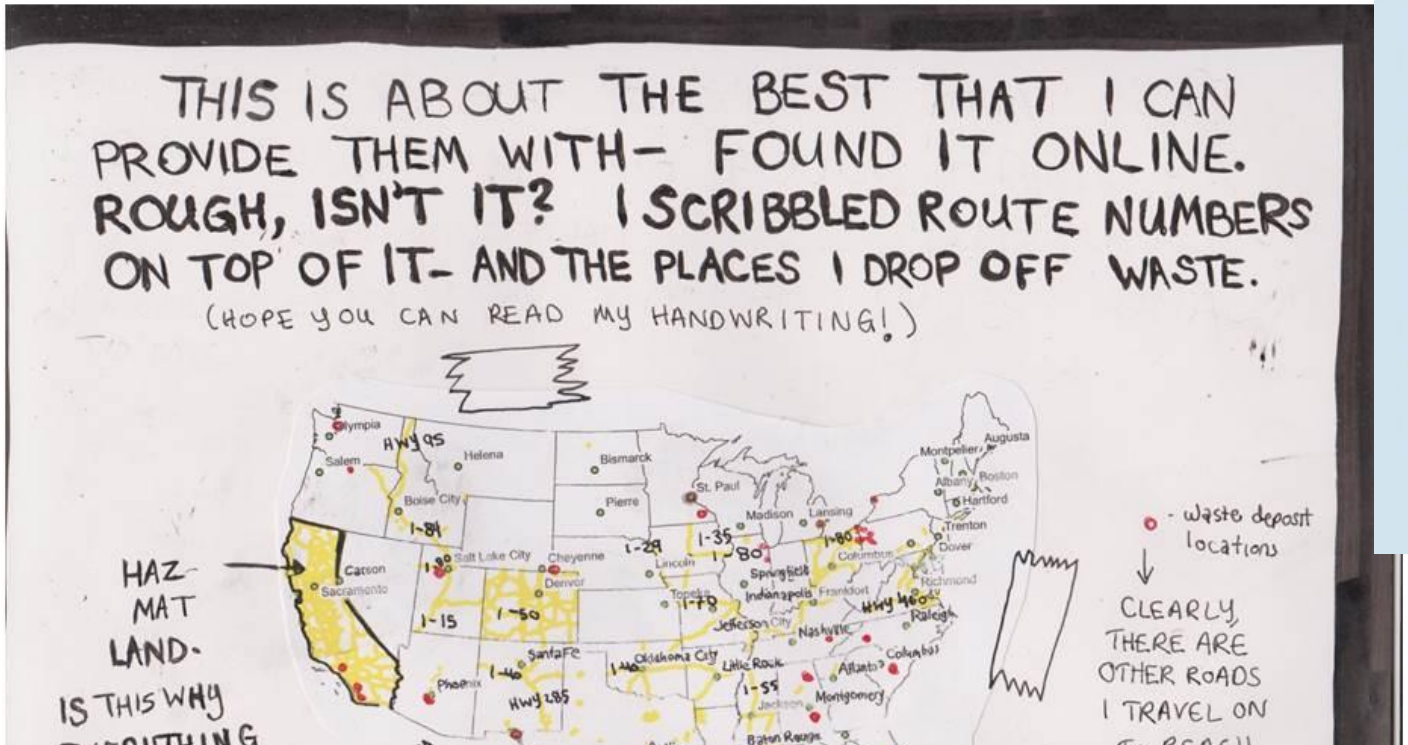
UNCERTAINTIES. DATA CAN BE:

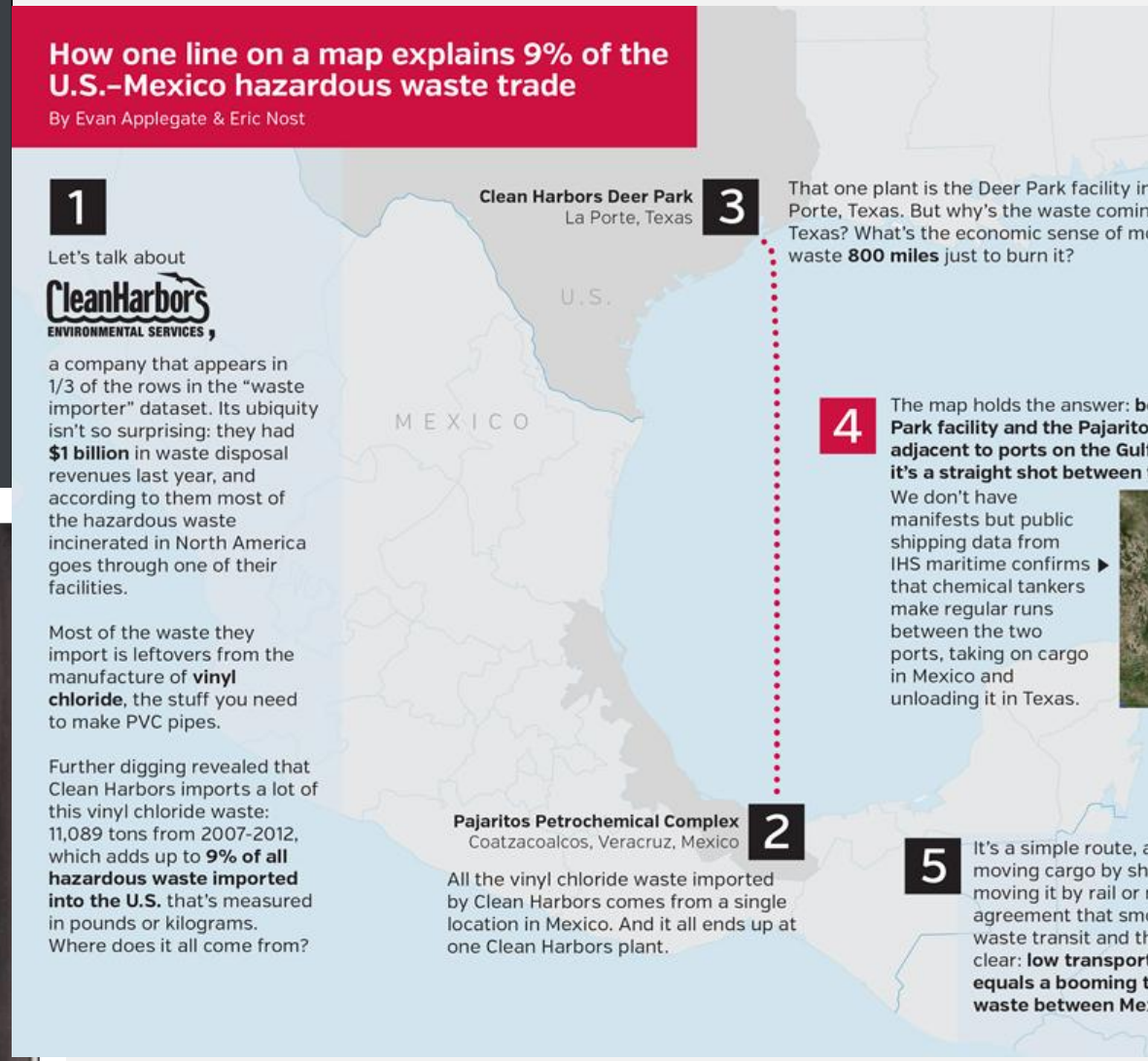
- **Imprecise**
  - Example: ”UN3077 – Environmentally hazardous substance, N.O.S. (not otherwise specified)” as a waste type or “Other reclamation” as a management method
  - Example: Geocoding exporters
  - Solution: Manually correct geocoding in Google Maps

OPPORTUNITY…

- Design Challenge
  - Take an ”ecosystem” or atlas-based approach:
    - Generate a multiplicity of views of the data
- Design an interactive tool to help us better grasp the dataset and its uncertainties







Clockwise from above: Evan Applegate and Eric Nost; Chelsea Nestel; Osama Abdl-Haleem

TOOL

http://geography.wisc.edu/hazardouswaste/map