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RCRA: Dangerous Waste Fundamentals

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What we will cover:

1. Basics of hazardous waste regulation.
2. An overview of hazardous waste identification and management.
3. Potential issues that may trigger an inspection.
4. How to prepare for an inspection.

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RESOURCE CONSERVATION & RECOVERY ACT (RCRA)

Photo credit: marstovedriver on Flickr

RCRA GOALS

1. Protect human health and the environment from the potential hazards of waste disposal.
2. Conserve valuable energy and natural resources.
3. Reduce the amount of waste that's generated whenever and wherever feasible.
4. Ensure that any wastes that are generated are managed in an environmentally sound manner.

Cradle-to-Grave

Hazardous waste programs provide a systematic approach for managing hazardous waste from the moment it is generated until it reaches its final disposition.

FEDERAL VS. STATE REGULATIONS

Federal

The Environmental Protection Agency (EPA)is responsible for creating and enforcing all federal environmental regulations.

- Codified under Code of Federal Regulations (CFR).

State

States can run their own hazardous waste (HW)programs.

- **Programs must be at least as stringent as EPA's HW regulations.**
- Every state has an authorized HW program, except for Iowa and Alaska.
- Most adopt EPA regulations "as is" or with minor changes.
- Some states, such as WA and OR, are **more comprehensive and stringent** than EPA standards.

(40 CFR 260 through 279)

NEED-TO-KNOW DEFINITIONS

- Solid waste
- Hazardous waste
- Risk management
- Risk communication
- Tracking compliance

What exactly is that stuff?

WHAT IS SOLID WASTE?

- Liquids, solids, or gases.
- Discarded, disposed, abandoned materials.
- Certain recycled materials, and materials accumulated and stored prior to recycling.

Is that product or waste in those tanks?

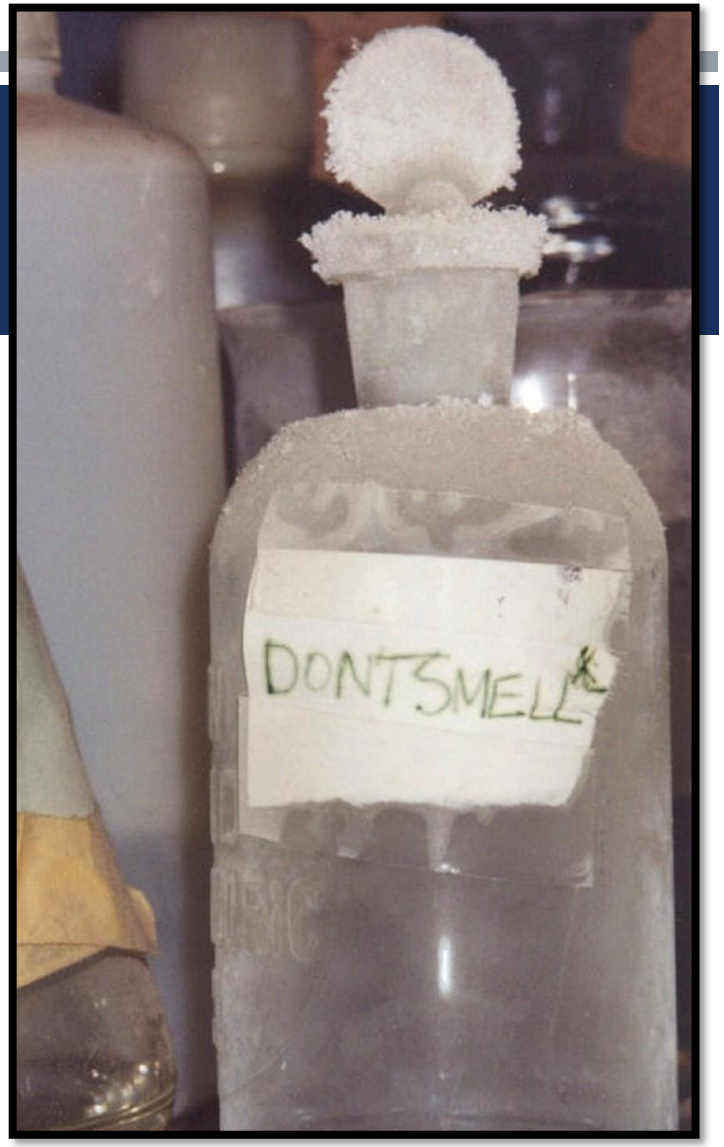
EXEMPTIONS, EXCLUSIONS, AND MORE

- Exemptions for certain recycling activities but watch out for shams.
- Exclusions for certain wastes.
- Special requirements for common wastes like:
  - Used oil
  - Antifreeze
  - Universal wastes
  - Pharmaceuticals
  - Other waste that can be recycled

WASTE DESIGNATION: KNOW YOUR STUFF

- Generator Knowledge
  - Safety Data Sheets (SDS)
  - Product Labels
  - Institutional Memory or Industry Knowledge

- Analytical Data
  - SW846 Sampling & Test Methods!!



Not all Safety Data Sheets, labels, fond memories, or knowledge cut it.

LISTED WASTE

P, U, F, and K-Codes

- Acutely hazardous chemicals (P-codes)
- Discarded chemical products (U-codes)
- Waste from non-specific sources (F-codes)
- Waste from specific industries or sources (K-codes)

Characteristic Waste

- Ignitable
- Corrosive
- Reactive
- Toxic by TCLP Test

State-Only Waste

- Waste designated by specific state environmental regulations.
- OR, WA, ID, etc.

IGNITABLE – D001

- LIQUID with a flash point <140°F
- SOLIDS that can cause a fire and sustain combustion
- COMPRESSED GAS
- OXIDIZERS

CORROSIVE – D002

- If it is aqueous (20% water of the total volume of the waste) and the **pH** is **≤2** *or* **≥12.5**
- If it is non-aqueous and **corrodes carbon steel at >0.25 inch/year**

REACTIVE – D003

- **Unstable** under "normal" conditions
- Can **cause explosions**, toxic fumes, gases, or vapors when heated, compressed, or mixed with water
- Examples:
  - Lithium batteries
  - Fireworks
  - Ammunition
  - Potassium cyanide

TOXIC D004 – D043

Toxicity Characteristic Leaching Procedure (TCLP)

- Test for known or suspected constituents of concern in your waste
- Compare waste concentrations to the list to determine if they're equal to or greater than the TCLP values.
- Examples:
  - Heavy metals
  - Organic pesticides

Maximum Concentration of Contaminants for the Toxicity Characteristic

Dangerous Waste Number	Contaminant	(Chemical Abstracts Services #)	DW (mg/L)
D004	Arsenic	(7440-38-2)	5.0
D005	Barium	(7440-39-3)	100.0
D018	Benzene	(71-43-2)	0.5
D006	Cadmium	(7440-43-9)	1.0
D019	Carbon tetrachloride	(56-23-5)	0.5
D020	Chlordane	(57-74-9)	0.03
D021	Chlorobenzene	(108-90-7)	100.0
D022	Chloroform	(67-66-3)	6.0
D007	Chromium	(7440-47-3)	5.0
D023	o-Cresol	(95-48-7) /1/	200.0
D024	m-Cresol	(108-39-4) /1/	200.0
D025	p-Cresol	(106-44-5) /1/	200.0
D026	Cresol	/1/	200.0
D016	2,4-D	(94-75-7)	10.0
D027	1,4-Dichlorobenzene	(106-46-7)	7.5
D028	1,2-Dichloroethane	(107-06-2)	0.5
D029	1,1-Dichloroethylene	(75-35-4)	0.7
D030	2,4-Dinitrotoluene	(121-14-2) /2/	0.13
D012	Endrin	(72-20-8)	0.02
D031	Heptachlor (and its epoxide)	(76-44-8)	0.008
D032	Hexachlorobenzene	(118-74-1) /2/	0.13

KNOW YOUR GENERATOR CATEGORY

	Very Small Quantity Generator (VSQG)	Small Quantity Generators (SQG)	Large Quantity Generators (LQG)
Quantity of acute hazardous waste (P-listed) generated per month	≤ 1 kg	≤ 1 kg	> 1 kg
Quantity of non-acute hazardous waste (U, F, K, D-Listed) generated per month	≤ 100 kg	> 100 kg and < 1,000 kg	≥ 1,000kg
Quantity of waste from a cleanup generated per month	≤ 100 kg	≤ 100 kg	≥ 100kg

Common Violations

- Failure to Complete a Waste Determination
- Spills & Releases
- Poor Container or Tank Management
- Illegal Disposal

Every problem possible?

INSPECTIONS

- Why do agencies inspect?
  - Scheduled/mandated
  - Complaints
  - Industry sector focus
  - Upon request

PREPARE FOR YOUR INSPECTION

- Know your inspection frequency
- Conduct regular reviews of paperwork and requirements
- Stay organized – paperwork and housekeeping
- Perform in-house inspections – document corrective actions
- Conduct required training
- Designate personnel and plan

THEY'RE COMING

- Announced vs. unannounced
- Gather paperwork
- Establish health & safety expectations
- Assemble designated personnel

THEY'RE HERE

- Arrival and check-in
- Opening conference
- Site walk
- Document Review
- Closing conference

OPENING CONFERENCE

- Introductions
- Establish on-site protocols
- Discuss objectives, areas of interest

SITE WALK

- Flow of process, points of generation
- Evidence of spills
- Satellite accumulation areas
- Container management (closed & labeled)
- Storage areas

PAPERWORK

- Determinations
- Inspection logs
- Manifests (and exception reports)
- Training logs
- Contingency plan

CLOSING CONFERENCE

- Did the inspector note any issues? Initial findings?
- Does the inspector have any questions?
- Any follow-up items from site?
- Ask about next steps from agency and what to expect

BEST PRACTICES

- Don’t underestimate housekeeping and organization
- Follow up and document closing the loop
- Use the inspection as a teaming opportunity with your regulator

HOT TOPICS DURING THE INSPECTION

- Container management, labeling
- Determinations, manifests, training, consistent documentation
- Health and safety risks
- Aisle space
- Satellite accumulation
- Solvent wipes, aerosol cans
- Universal waste accumulation, storage
- Releases, spills, sumps

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Hazardous Waste Hot topics

Agenda

1. Solar Panels

2. Lithium Batteries

3. Vapes

4. Fluorescent Lamps

What is universal waste?

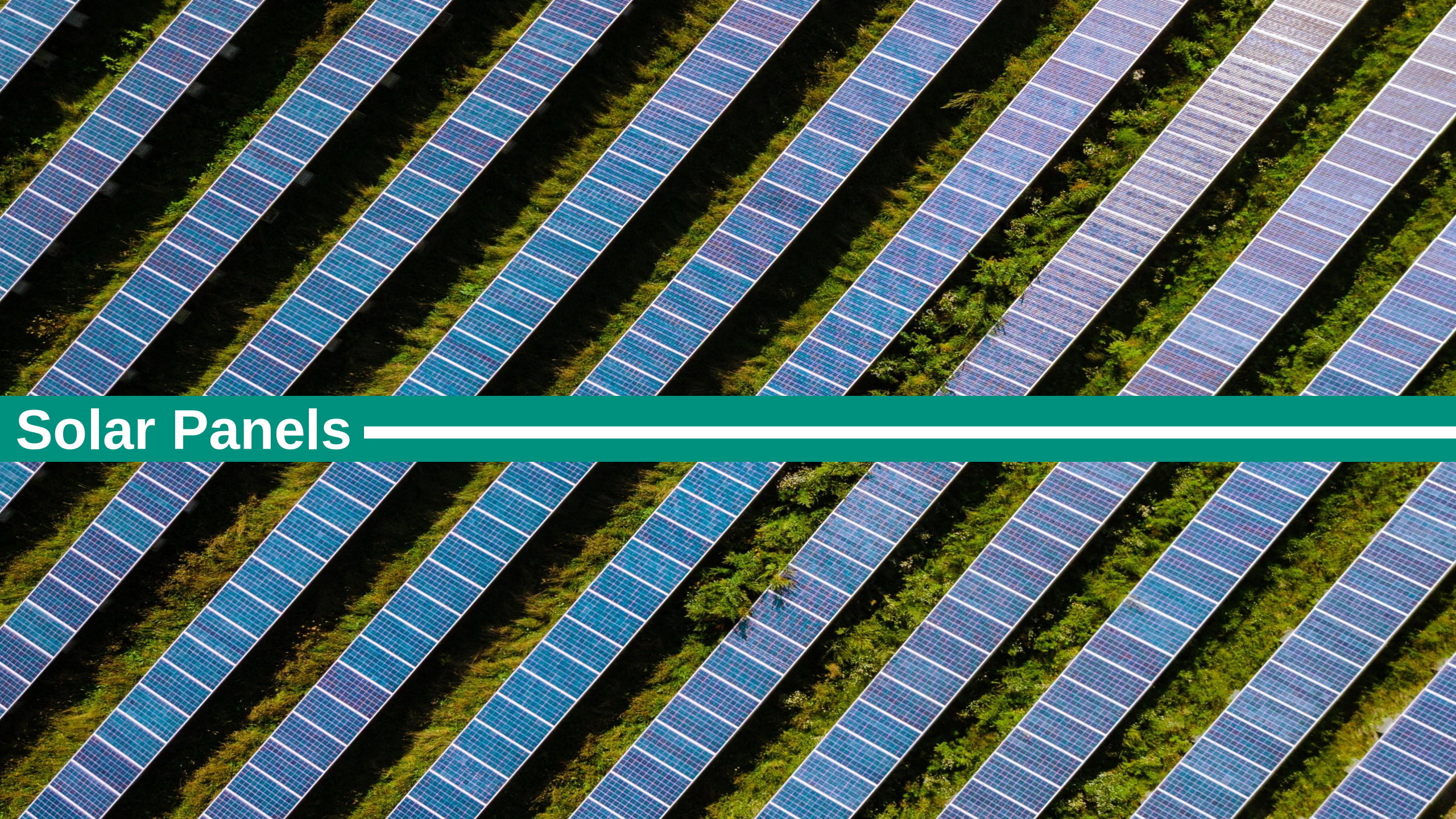
Aerosol Can

Batteries

Pesticides

Mercury-containing switches

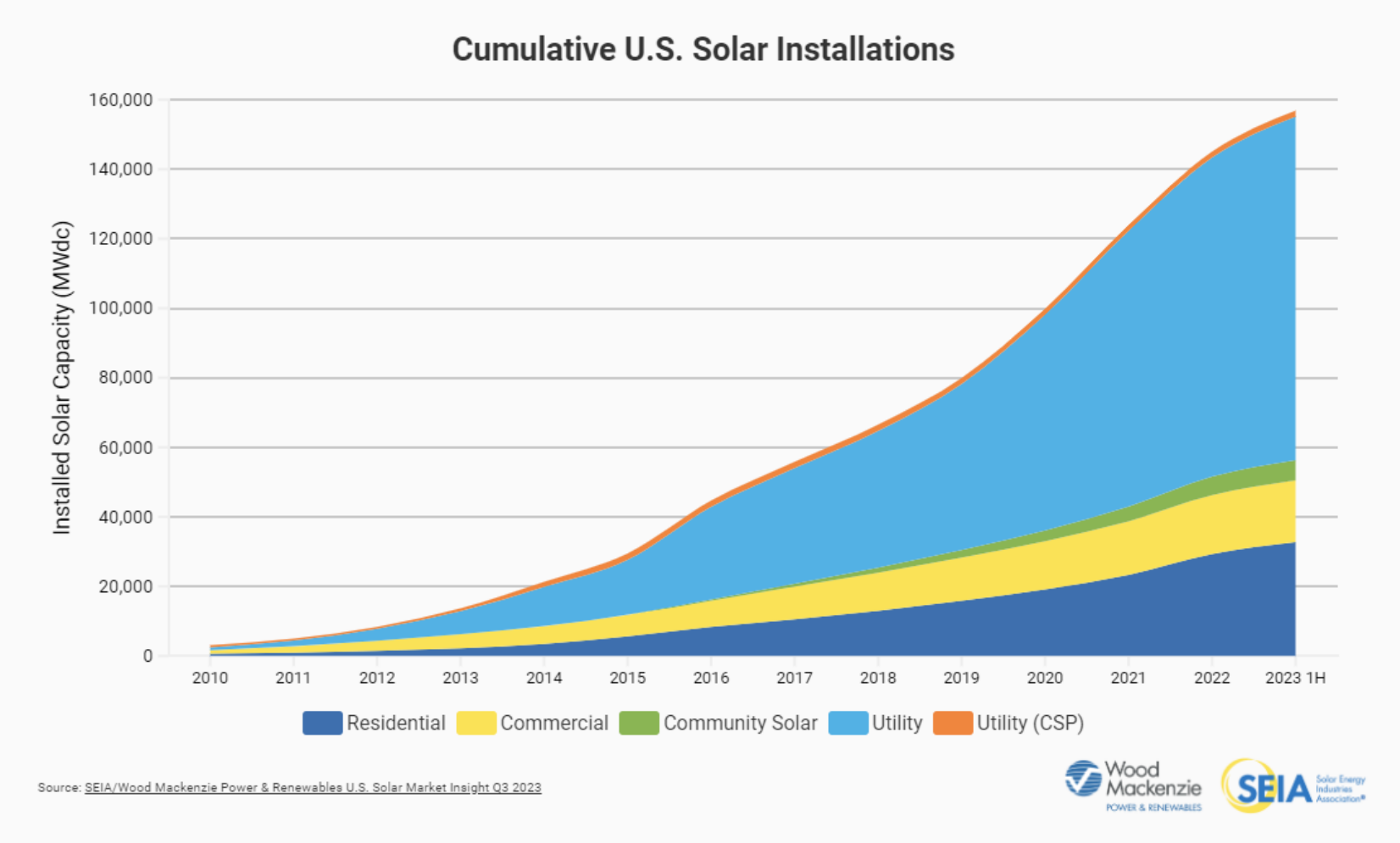
Mercury-containing lamps



Solar Panels

EPA plans to propose new rules to improve the management and recycling of end-of-life solar panels. EPA is working on a proposal to add hazardous waste solar panels to the universal waste regulations found at Title 40 of the Code of Federal Regulations Part 273.

Growth of solar



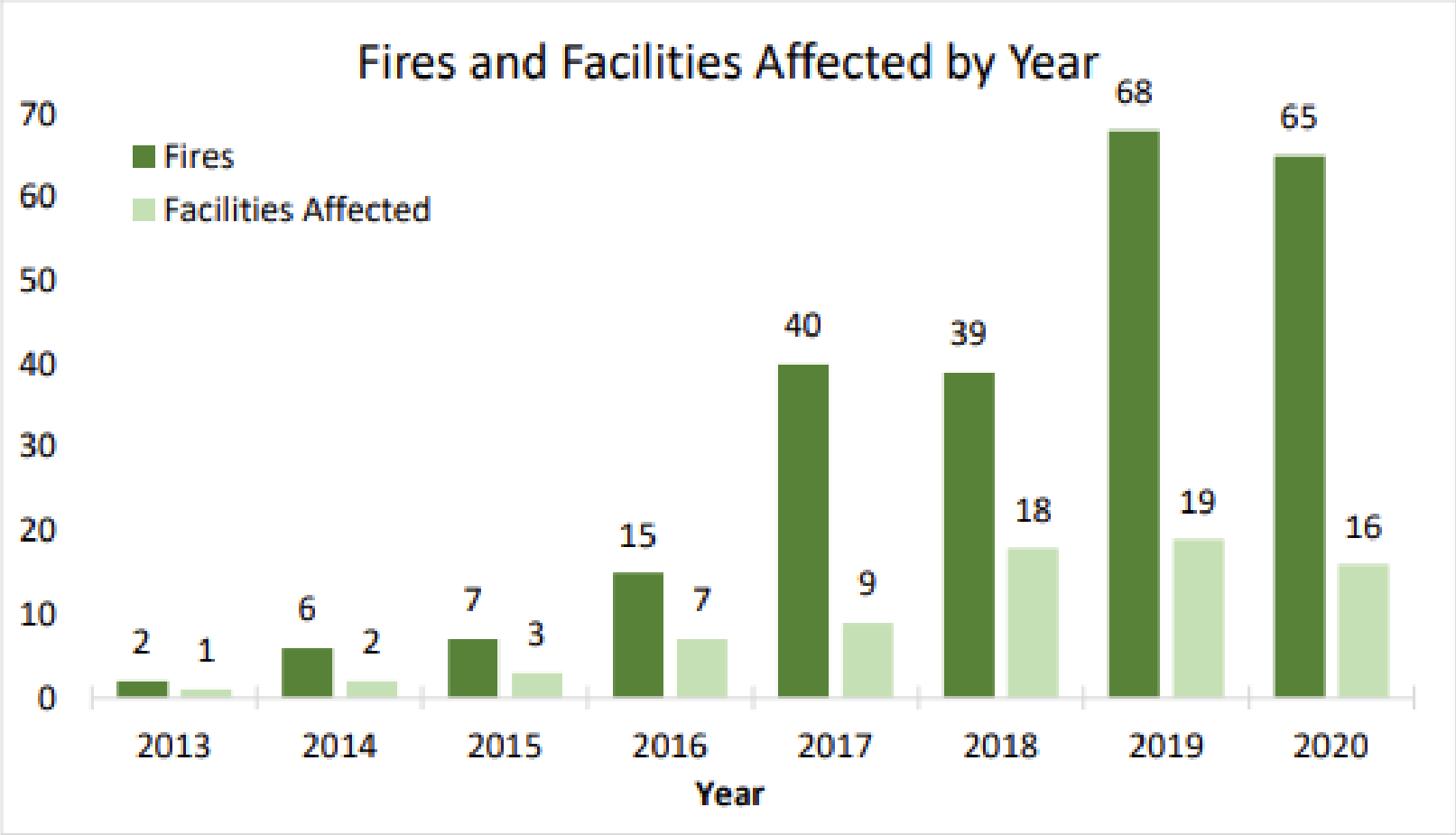
What does this mean for you?

- More end-of-life options
- Less restrictive management
- More solar!

Lithium Batteries

EPA plans to propose new rules to improve end-of-life management and recycling and establish a new, distinct category of universal waste specifically tailored to lithium batteries.

Why lithium-ion?



Source: EPA - An Analysis of Lithium-ion Battery Fires in Waste Management and Recycling

Vapes

Their waste, your problem

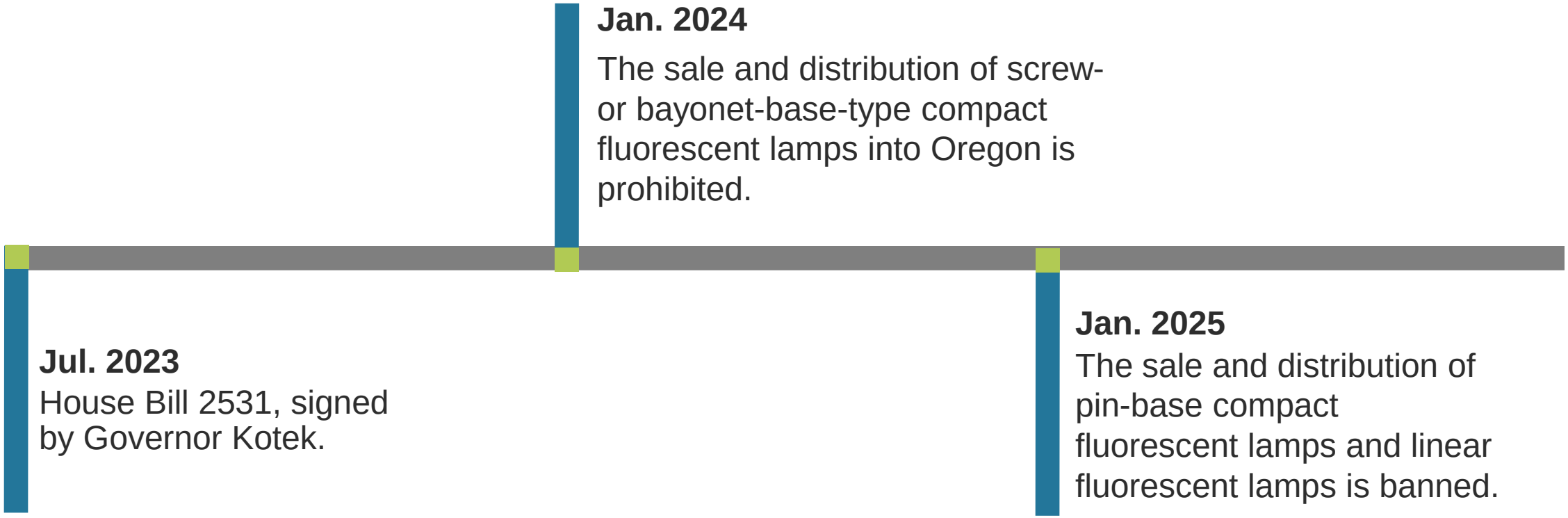
P075 listed

Batteries

- Airports
- Schools
- Law enforcement
- Workplaces

Fluorescent Lamps

Oregon HB 2531 Timeline



A bright idea

- LEDs do the job of most other types of lights.
- Exemptions exist.
- Incentives to switch still exist….but not forever.

Tools and resources

DEQ Technical Assistance

Hazardous waste technical assistance available from DEQ is non-regulatory in nature and is available free in the form of on-site visits, training workshops and telephone consultations.

Hazardous waste guidance documents

One stop shop for DEQ's hazardous waste management guidance documents.

DEQ Hazardous Waste Training

Free in-person, virtual and recorded trainings all in one place. Sign up for updates while you're there.

Thank you

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QUESTIONS?

You ask ‘em, we (try to) answer ‘em!