Batteries & HHW

Identifying their hazards and how to avoid them.

Why this topic?

- It is pertinent to complying with your permit.
- It effects you and your customers on a daily basis.
- Batteries are becoming more diverse.
- The chemical make-up is ever changing.
- And there is the obvious reason ...

...The safety of you, your customers, everyone around you and the environment.

Why this topic?



Agenda

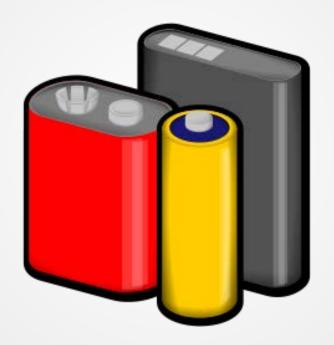
- Types of Batteries
- Dangers and Hazards Associated with Batteries
- Options for Disposal of Batteries
- Management of Batteries at Your SW Facility
- Activity
- Used Oil & HHW Grants
- How Different Wastes at HHW Events can Effect the Cost
- Educating Your Residents Before the HHW Event

Presenters for the Day

- Dean Robinson, HHW Coordinator, NHDES
 - Dean.F.Robinson@des.nh.gov
 - o (603) 271-2047
- Sean Plasse, Program Manager, Northeast Region/Call2Recycle, Inc.
 - o <u>Splasse@call2recycle.org</u>
 - o (802) 310-4123
- Tara Mae Albert, SWOT Coordinator, NHDES
 - o <u>Tara.M.Albert@des.nh.gov</u>
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TYPES OF BATTERIES

Dean Robinson



TYPES OF BATTERIES



BUTTON CELL BATTERIES









BUTTON CELL BATTERIES

Button Cells
Thermostats
Thermometers
Switches
Relays
Other



"Treat them as Mercury Containing Devices"

ALKALINE BATTERIES









LEAD ACID BATTERIES



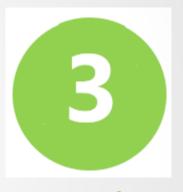
MANAGING LEAD ACID BATTERIES



Separate battery poles

2

Must be able to inspect



Impervious
Surface &
under cover



LITHIUM & LITHIUM-ION BATTERIES





LITHIUM ION BATTERIES



7,104 CELLS



1,200 LBS



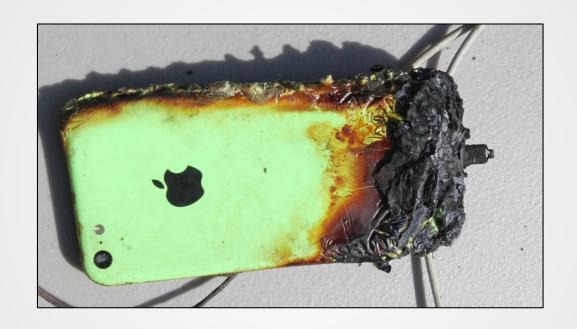
RECHARGEABLE BATTERIES



Rechargeable = Recyclable











Battery fires happen in transport



Lithium Batteries are a DOT Haz-Mat





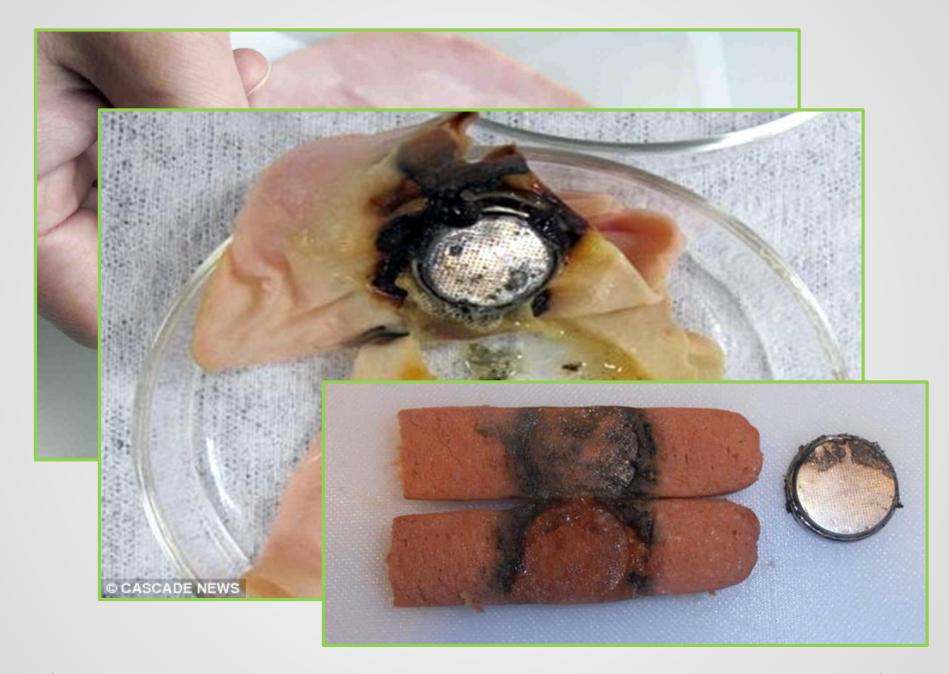
Teenage Girl Killed When Her Mobile Phone Explodes While She Is Talking To Relative

https://koko.ng/teenager-girl-killed-when-her-mobile-phone-explodes-while-she-is-talking-to-relative/



Terrifying moment passenger's hand luggage bursts into flames

https://www.thesun.co.uk/news/5670028/fire-video-china-southern-plane-explosion/





Daily **Mail**

Tuesday, Jan 21st 2020 7AM 9°F 🙀 10AM

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Latest Headlines | Meghan Markle | Fashion Finder | Food | Shopping | Gardening | Parenting Blog | Games

How small batteries have become the new child killer: They look innocuous,

Batteries Cause Devastating Injuries

ernal

Like a horror

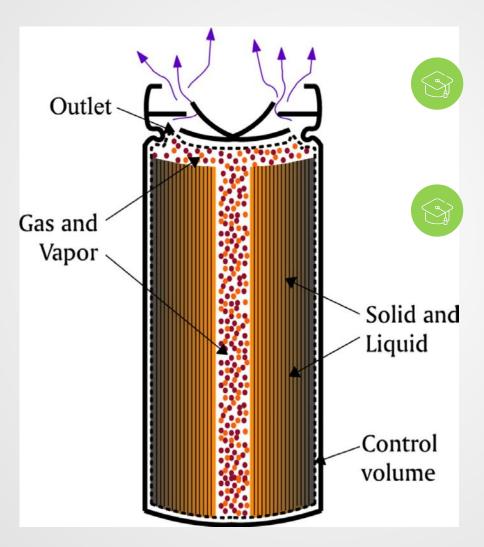
The Bottom Line

Swallowed batteries burn through a child's esophagus in just 2 hours, leading to surgery, months with feeding and breathing tubes, and even death. About the size of a nickel, 20 mm, 3-volt lithium coin cells are the most hazardous as they are big enough to get stuck and burn faster. Secure battery compartments and keep loose batteries away from children.



Ireactions ıstic soda agus

OFF-GASSING



Designed to release gasses

Can build up in confined spaces

SORTING AREA



Alkaline Rechargeable Lithium

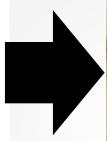
- Protected from Weather
- Magnification Tools
- Deal with leaking batteries ahead of time
- Bags & Tape
- P.P.E. (Gloves, Glasses, Gasses)

SORTING AREA

CO2, Methane, Ethane, & Ethylene



















Carbon dioxide gas discharge into nearby space can collect here When alarm operates vacate immediately Carbon dioxide gas can cause injury or death

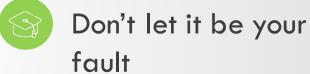




No smoking or naked lights



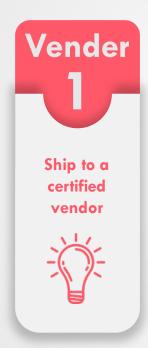








OPTIONS







#1 THING YOU CAN DO

Give your customers options!

- Hand Outs -
- Signs -
- Links -
- Keep it Local -
- Other?



KEEP IT LOCAL

Batteries Plus Bulbs

Manchester, NH (603) 621-0100

Open until 8:00 PM

Batteries Plus Bulbs

Newington, NH (603) 433-1677

Open until 8:00 PM

Batteries Plus Bulbs

Nashua, NH (603) 883-5060

Open until 8:00 PM

Batteries Plus Bulbs

Salem, NH (603) 685-0293

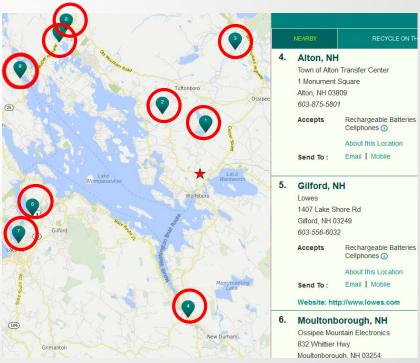
Open until 8:00 PM



KEEP IT LOCAL









IF IT'S RECHARGEABLE...IT'S RECYCLEABLE



FINAL THOUGHTS



Prepare

A good sorting location will reduce confusion. Safety equipment will reduce accidents



Have Options

Make it easy for residents to find vendors for the things you cannot accept.



Add Links

Have links on your web page that you can refer residents to when it gets busy.



Create an Image Library

Take and save photos for training purposes.



Educate Residents

Reach out at schools, town days, and throughout the year. Provide handouts, cable TV information, and workshops.



Don't be a Stranger

Reach out to NHDES for help and assistance whenever needed. Let us know about your successes.





Managing Batteries

Sean Plasse
Program Manager, Northeast Region
splasse@call2recycle.org





Battery Awareness

Lithium Battery Fire



Video Shared with Permission from DEM-CON





Call2Reycle's Defining Moment - June 5, 2017







Tioga County, NY January 2020









Batteries

Two Battery Types

Primary – One and done. Rechargeable – Use it more than once.

> Latin Roots Prime (one) Re (repeat)







DDR Batteries

Damaged, Defective, Recalled LITHIUM batteries.

A Department of Transportation statutory term that ONLY applies to lithium batteries. Declares a hazardous material. Requires CFR 49 certification and procedures.

EPA – Determines 'hazardous waste.' Example, NiCd Battery.

DOT – Determines 'hazardous material.' Lithium DDR Battery.

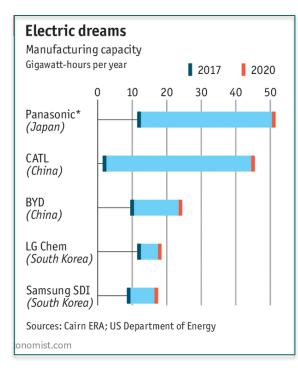


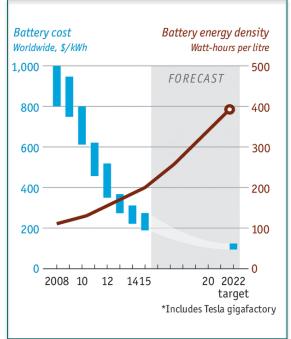






The Dynamic Lithium Battery Market









Internet of Things (IOT)

2020 - 10 billion

2025 - 62 billion

400% Increase in Lithium Manufacturing Capacity



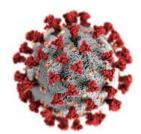




Internet of Things (IOT) Internet of Everything Enterprise of Things

Wearables
Smart Homes
Healthcare
Small Businesses
Banking
Education
Retail

E-Commerce
Transportation
Agriculture
Smart Cities
Insurance
Supply Chain
Utilities











































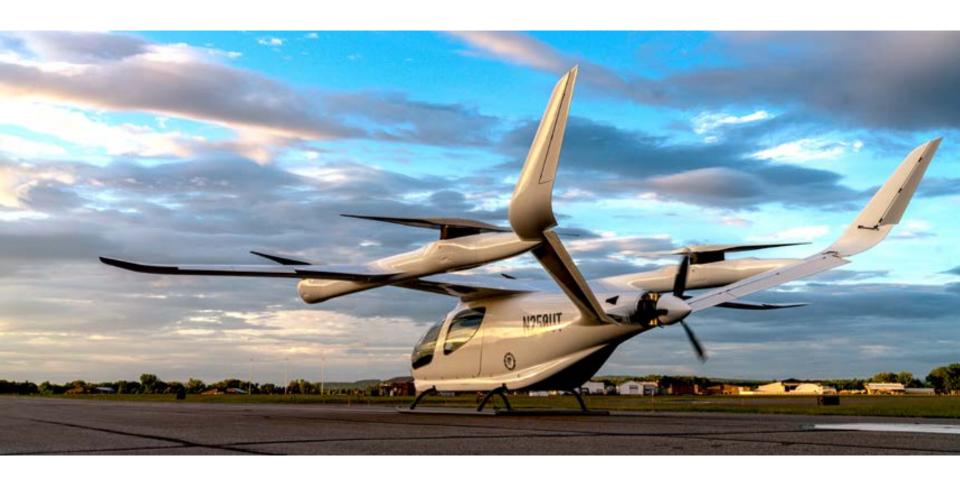
Lithium Batteries Winners of the 2019 Nobel Prize in Chemistry John B. Goodenough, Akira Yshino, M. Stanley



"They have laid the foundation of a wireless, fossil fuel-free society, and are of the greatest benefit to mankind."









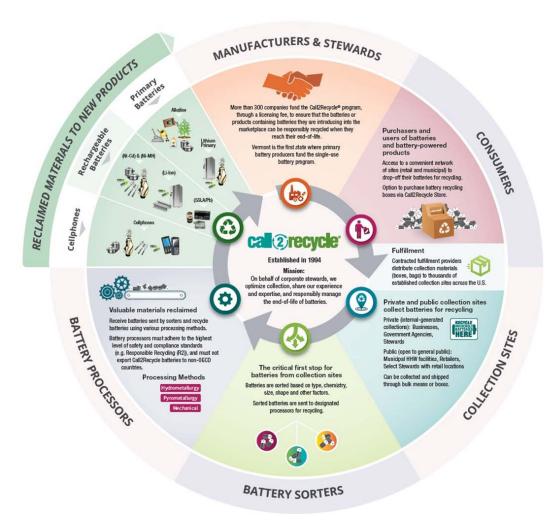




Call2Recycle

The country's largest, most reliable battery recycling program.

> Funded by 300 battery producing stewards.







Call2Recycle Battery Program

Free program for municipalities to recycle rechargeable batteries. Includes free boxes, shipping, and recycling costs.

Improves the fire safety and environmental mission of collection sites.

Call2Recycle can also take non-rechargeable(primary) batteries as a fee-based service.







Battery Recycling

Call2Recycle Mixed-Battery Boxes

DOT approved for 66lbs, mixed battery use.

Display, collections, storage.

No cost to municipal facilities for rechargeable or mixed-use.

Pre-paid, pre-labeled for shipping.









Patented Flame-Resistant Liner

Third-Party Tested - Extensive testing by independent laboratory, withstood up to 1,100 degrees F.

Containment - Prevents flames & heat from spreading outside the box.









Rechargeable Batteries – Free for Munis



Nickel Cadmium (Ni-Cd)



Lithium Ion (Li-Ion)



Nickel Metal Hydride (Ni-MH)



Small Sealed Lead Acid (SSLA/Pb)



Nickel Zinc (Ni-Zn)





Non-Rechargeable Batteries – Fee Based



Alkaline: AA, AAA, 6V, 9V, C, D, button cells \$0.40/lbs + shipping



Lithium Primary \$3.75/lbs + shipping





Minimum Terminal Protection Guidelines SHIPPING IN CALL2RECYCLE BOXES

Below are the minimum requirements for preparing household batteries for shipment. When in doubt of the battery type, Call2Recycle® recommends the battery be individually bagged or taped.

BATTERY TYPE / CHEMISTRY

TERMINAL PROTECTION REQUIRED?

Terminal protection

REQUIRED

Terminal protection REQUIRED

9V or Less = NO (drop in the box)

12V or Less = NO (drop in the box)

Greater than 9V = YES -

Greater than 12V = YES -

Charge Up Safety!

call2recycle.org/safety







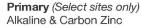
Battery terminals that touch metal surfaces or other batteries can spark, causing a fire or explosion.



Rechargeable

Nickel Cadmium (Ni-Cd) Nickel Metal Hydride (Ni-MH) Nickel Zinc (Ni-Zn)







Button/Coin Cell

Small Sealed Lead Acid (SSLA/Pb) Lithium Ion (Li-Ion)



 DAMAGED BATTERIES: Special U.S. DOT-approved packaging (not included here) for shipment required. Contact Customer Service at 877,723,1297 for assistance.

All = YES

Call2Recycle boxes should be shipped when full (66 lbs.) or within one year of the collection of the first battery.

Terminal protection

REQUIRED

Store the Call2Recycle collection box in a cool, dry place and where it is under supervision.

Protect terminals before shipping Bag or Tape *Each* Battery!







- Place each battery into a clear plastic bag.
- · Call2Recycle-provided bags
- Produce bags
- · Newspaper bags
- Ziploc® bacs
- Clear bags only
- If no bags are available, tape the positive (+) terminal with a nonconductive tape.
- · Clear packing tape
- · Electrical tape • Duct tape
- No masking tape No Scotch™ tape No painter's tape Do not cover

(drop in the box)



call 2 recycle

REMINDER: Call2Recycle only accepts battery shipments in Call2Recycle boxes or those pre-approved by Call2Recycle.

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Do not use any of the following for protecting battery terminals.

Do not put anything else in the box.







Grocery bags



Masking tape



Paper bags



Scotch tape



Paraffin or other dipping products





For button/coin cells, make a ravioli.

CLEAR packing tape, sticky side up.

Button/coin batteries on the tape with space between each battery.

Cover with a second layer of CLEAR tape.









CellBlock DDR Kits



DDR lithium-ion batteries. U.S. DOT approved recycling kit.

U.S. DOT Special Permit 20549 that fully complies in transporting hazardous materials.

Pre-paid shipping and recycling. Order online. www.call2recycle.org







Bulk DDR Kits

132 lbs. of DDR Batteries

U.S. DOT Special Permit 20549. Fully complies in transporting hazardous materials.





High Watt-Hour Box - 300Wh to 800Wh - End of Life







>300 WH is Hazardous Material (even not DDR)
80 volts x 40 amp-hours = 320 watt-hours
Kit Pre-Permitted for 300Wh to 800Wh
For "end of life" only, not DDR.
No CFR Training or Paperwork





Lithium Fire

Heat
Fuel
Oxygen
Toxic Gases







CellBlockEX

Fire-suppression material. 100% recycled glass granules.

Heat – As glass melts, it pulls heat from fire.
Fuel – The porous surface absorbs electrolytes.
Oxygen – Glass melts to form a silicate coating, cutting off O2.

Class D, combustible metals, lithium-ion battery fires.

Non-Toxic – Glass is inert, and also does not chemically react with lithium fire.

Absorption – Granules absorb vapors.











Lithium-Ion Battery Incident Kits (LIBIK)





Convenient wall-mount bracket provided. Custom kits and configurations available.

protect the user when approaching overheating devices.

• Manufactured using composite textiles made to

withstand extreme temperatures.





Gloves, Standard Blanket, PED-Pad Pillow

Gloves, High Watt Hour Blanket, (2) PED-Pad Pillows

LBKEHSHW02 High Watt Hour Lithium-Ion



Great solution for storing DDR and E-Waste.

Drums are lined with CellBlockEX granules to filter heat, smoke and fumes, with a vented lid.

Transport lithium-ion batteries when packaged with CellBlockEX.

Access to DOT Special Permit 20549.

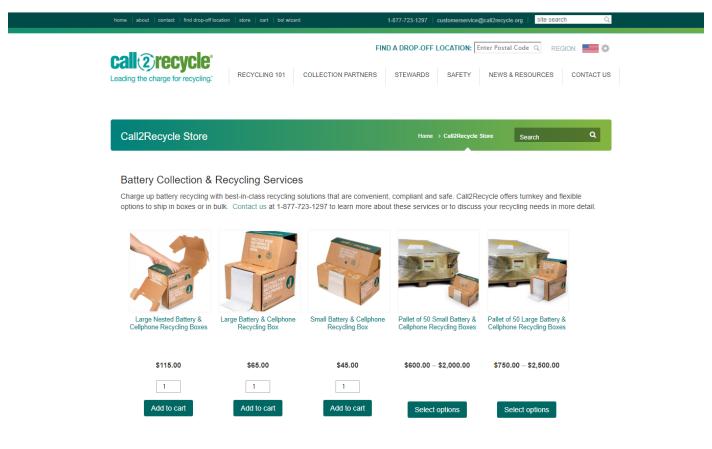
Reusable.







Call2Recycle Online Store







Battery Strategic Planning

Battery Program
Budgeting
Facility Layout
Training
Safety Products
Outreach

Future Proofing







Mark you!

Sean Plasse
Program Manager, Northeast Region
splasse@Call2Recycle.org

Corporate Headquarters: 1000 Parkwood Circle, Suite 200 Atlanta, Ga 30339



HHW SORTING EXERCISE

IDENTIFY THE HAZARDS









- Ignitable/Flammable
- Corrosive
- Reactive
- Toxic
- Non hazardous
- Unknown

*Recognize Incompatibles





WARNING: FLAMMABLE. Read cautions on back panel.

- Burns or Ignites easily.
- The label says:
 - Combustible. Flammable.
 - Do not use near heat or flame.
 - Do not smoke while using this product.
- Paint, automotive products, thinners and other solvents are the most flammable household products.



- Can burn skin/tissue, clothing or other materials.
- The label could say:
 - Causes severe burns on contact.
 - Can burn eyes, skin or throat.
- Oven, drain and toilet bowl cleaners are common corrosive products.

gastric lavage. PHYSICAL AND CHEMICAL HAZARDS: This product contains bleach. Do not use or mix with other household chemicals such as other toilet bowl cleaners, rust removers, asids or products containing ammonia. To do so will release hazardous, irritating gases. Avoid contact with clothes, fabric, carnet wood pointed and applications.

- Could create a poison gas when mixed with other products.
 Explodes when exposed to heat, shock or pressure.
- The label could say:
 - Do not mix with other household products or keep away from heat or pressure.
- Chlorine bleach reacts with many other common cleaners.
 Household products should never be mixed.



KEEP OUT OF BEACH OF CHILDREN DANGER: MAY CAUSE EYE BURNS. SKIN IRRITANT. HARMFUL IF SWALLOWED OR INHALED. See back panel for additional precautions and First Aid information

- Can cause short or long-term illness or death.
- The label could say:
 - Harmful or fatal if swallowed.
 - Use only in a well-ventilated area.
- Pesticides, paint thinners, many automotive products and some cleaners are toxic.

NAME THAT CHARACTERISTIC

- Identify what you see and then figure out which of the characteristic it may have:
 - Ignitable, Corrosive, Reactive, and/or Toxic
- Are any of them compatible?
- How should they be stored?



Dean Robinson

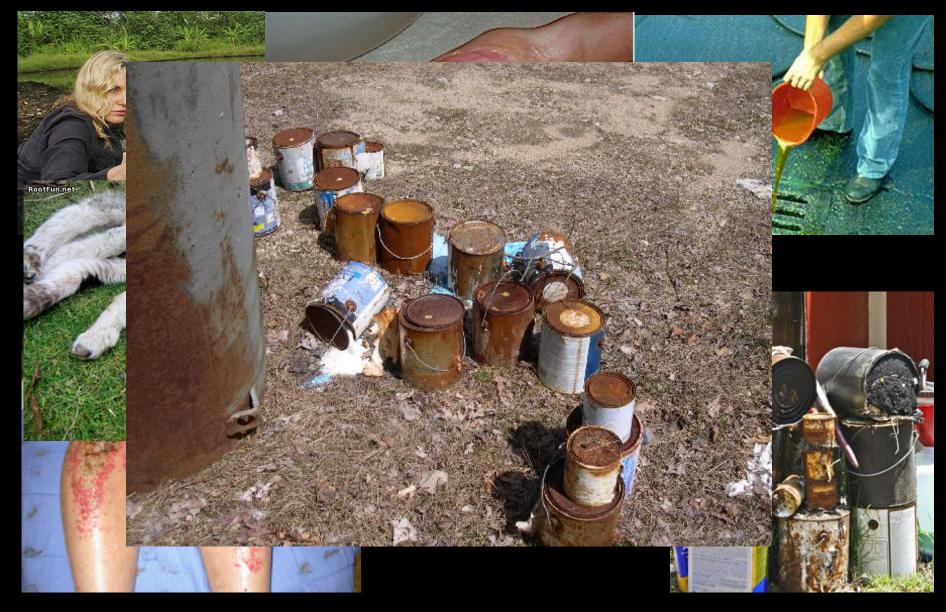
Used Oil

SKELLY ILEX SKELLY OIL COMPANY SKELLY OIL COMPANY

HHW



Why Collect?



Who Can Apply?



Towns



Planning Commissions



Cities



Solid Waste Districts

What is Reimbursable?

HHW



- HHW Events
 - Vendor Expenses
 - Police Support
- Outreach
- Training
- Labor

What is Reimbursable?

Used Oil



- Burner Service
- Repairs
- Concrete Pads
- Fencing
- Anything CollectionRelated

How Much Can I Have?



HHW Match Grant

HHW facility used in absence of hauler



HHW Facility used to reduce hauler costs



Multiple events and/or multiple communities



Single community holding a single event



Used Oil Gift Grant

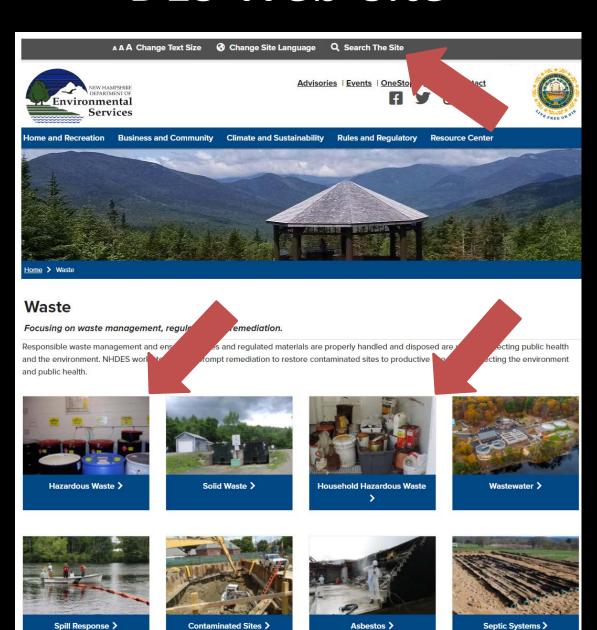
\$2,500 for a single community



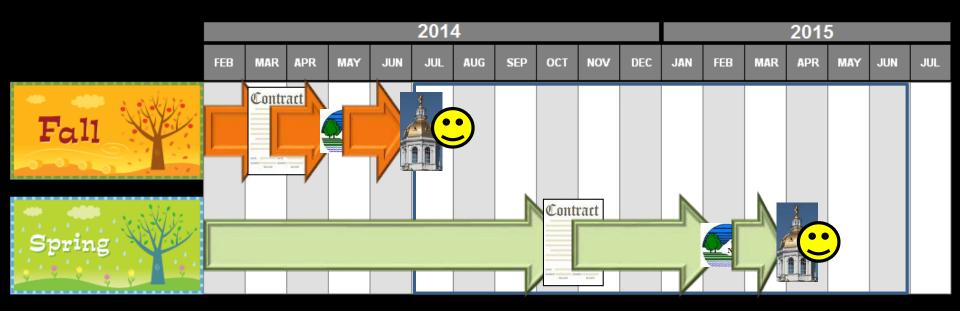
\$5,000 for a multiple community collection center



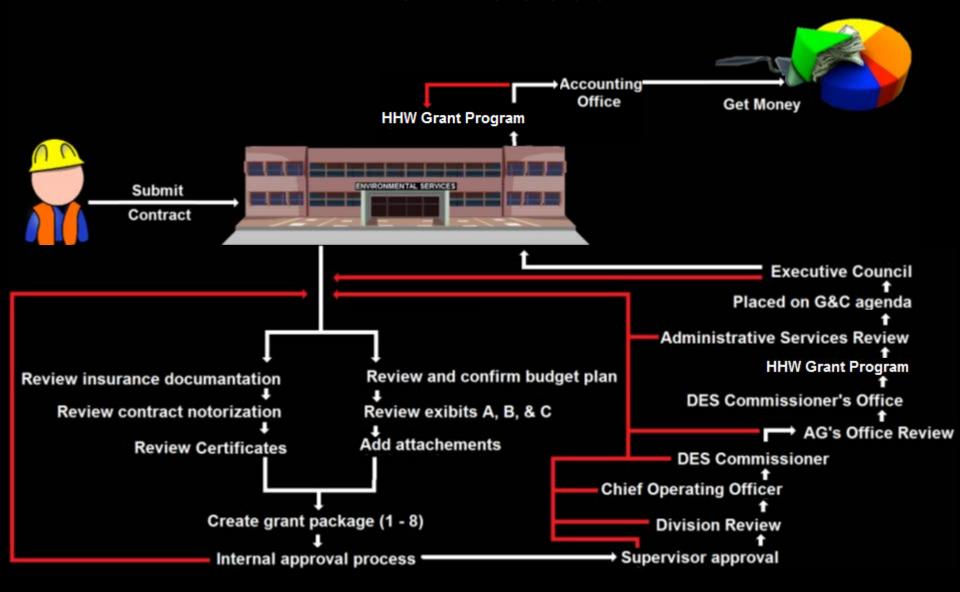
DES Web-Site



Stay on Schedule!



The Process



What to Remember

All HHW <u>applications</u> are due Feb 1st and must be received by NHDES before the grant contracts can be sent out.

Used Oil applications are "first come, first serve" and will be accepted on a rolling basis until the money runs out for the year.

More collection/drop off opportunities = more money.

COST EFFECTIVE COLLECTIONS

What drives up costs?



What gives you the most for your money?



COST EFFECTIVE COLLECTIONS

- Location
 - Traffic patterns
 - High or low participation (per-capita costs)
 - Staff & volunteer labor





Bulbs

State universal waste contract tends to be best price.

LAMPS:	Unit of Measure	Unit Cost
Straight Fluorescent	Price Per Foot	\$0.055
U-Tubes, Circline and Compact Fluorescent	Price Per Lamp	\$0.20
Specialty Mercury Vapor, Metal Halide, LPS, HPH	Price Per Lamp	\$0.50
Broken/ Crushed Fluorescent Lamps	Price Per Pound	\$0.50
Specialty UV Fluorescent	Price Per Lamp	\$0.47
BALLASTS:	<u>Unit of Measure</u>	Unit Cost
Non-PCB	Price Per Pound	\$0.10
PCB- Non Leaking	Price Per Pound	\$0.45
PCB- Leaking	Price Per Pound	\$0.45
MERCURY DEVICES:	<u>Unit of Measure</u>	Unit Cost
Intact Mercury Devices	Price Per Pound	\$1.45
RECYCLING KITS- LAMPS	<u>Unit of Measure</u>	Unit Cost

Household Chemicals

Toxic, Corrosive, Flammable, Reactive

Use HW Vendor

- Be your own permanent HHW facility
 - ✓ Training
 - ✓ Real Estate
 - ✓ Liability
 - ✓ Labor

Batteries

HW Vendor

- Battery Recycling Vendor
 - Used to be free
 - Speak to your vendor



Pharmaceuticals

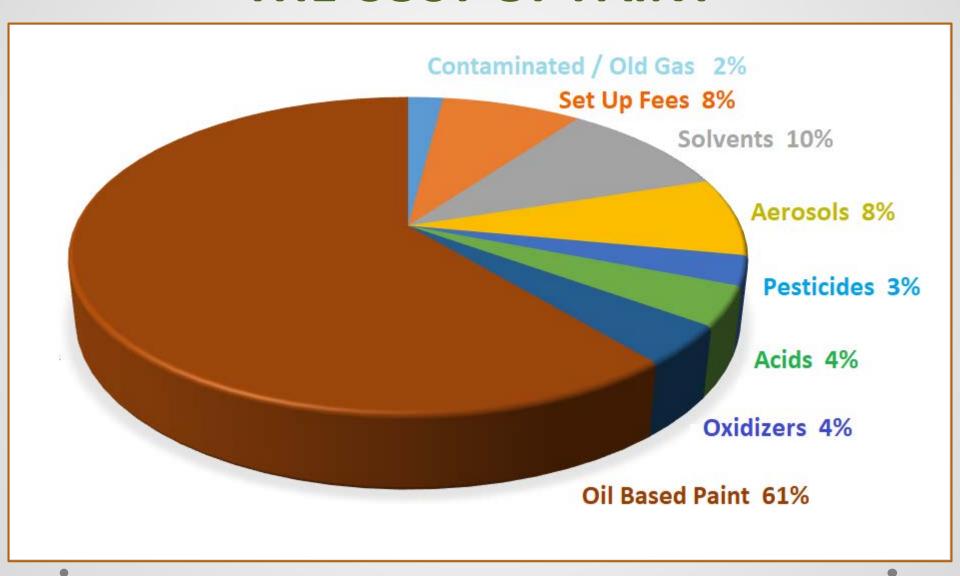
- Not usually reimbursable under HHW grant
- Law Enforcement (DEA requires double)
- Is a pharmacist required?



Pharmaceuticals



THE COST OF PAINT



Hosting a Successful HHW Event

Five Tips and Tricks





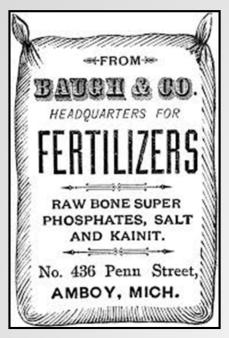
Getting the Word Out

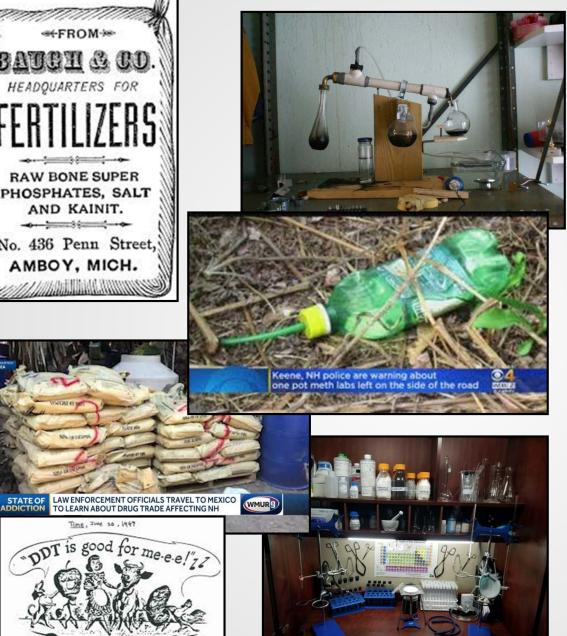
- Social Media
- Newsletters
- TV/Radio
- Information at the TS
- Vendor Events
- Tax Bills
- Visit local schools
- PartnerOrganizations



Know Your Target Audience

- Who is coming to these events?
 - Residents
 - Old/Young/Families
 - Do you have the potential to reach small businesses?
 - What are these people bringing in?





Prepare for the Unexpected

- In your advertisements include a phone number for people to call in case they have items of concern.
- Give examples!
 - Foreclosure
 - MethLab
 - Old Barn Clean out





Education & Outreach

Proper Mgmt. of HHW

Common Goal

Education! Education! Education!

- What is HHW? What is NOT?
- Determine what you can and cannot take.
- Who to EDUATE???
 - Residents
 - Volunteers
 - Workers
 - SW Operators
 - Vendors





Prep & Landing

- Know your site
- Prepare your site
- Prepare yourvolunteers andworkers aheadof time



