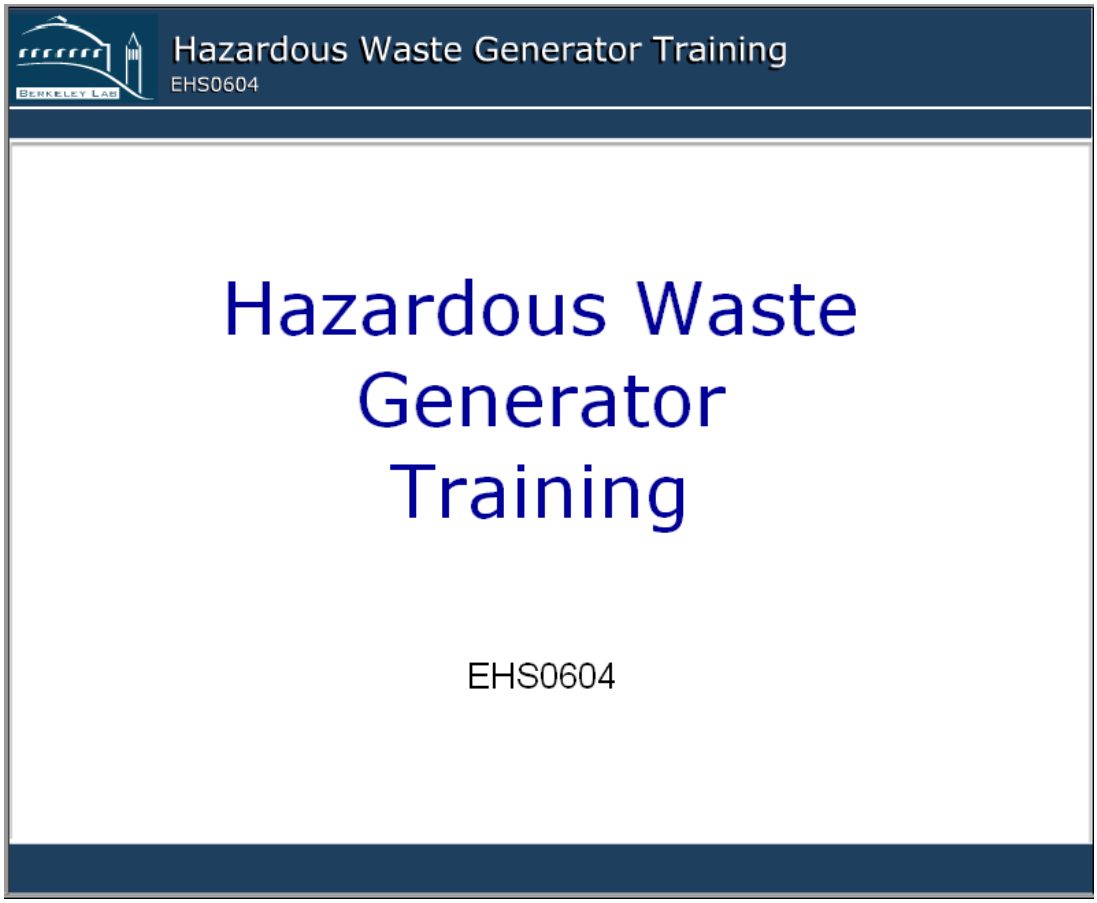
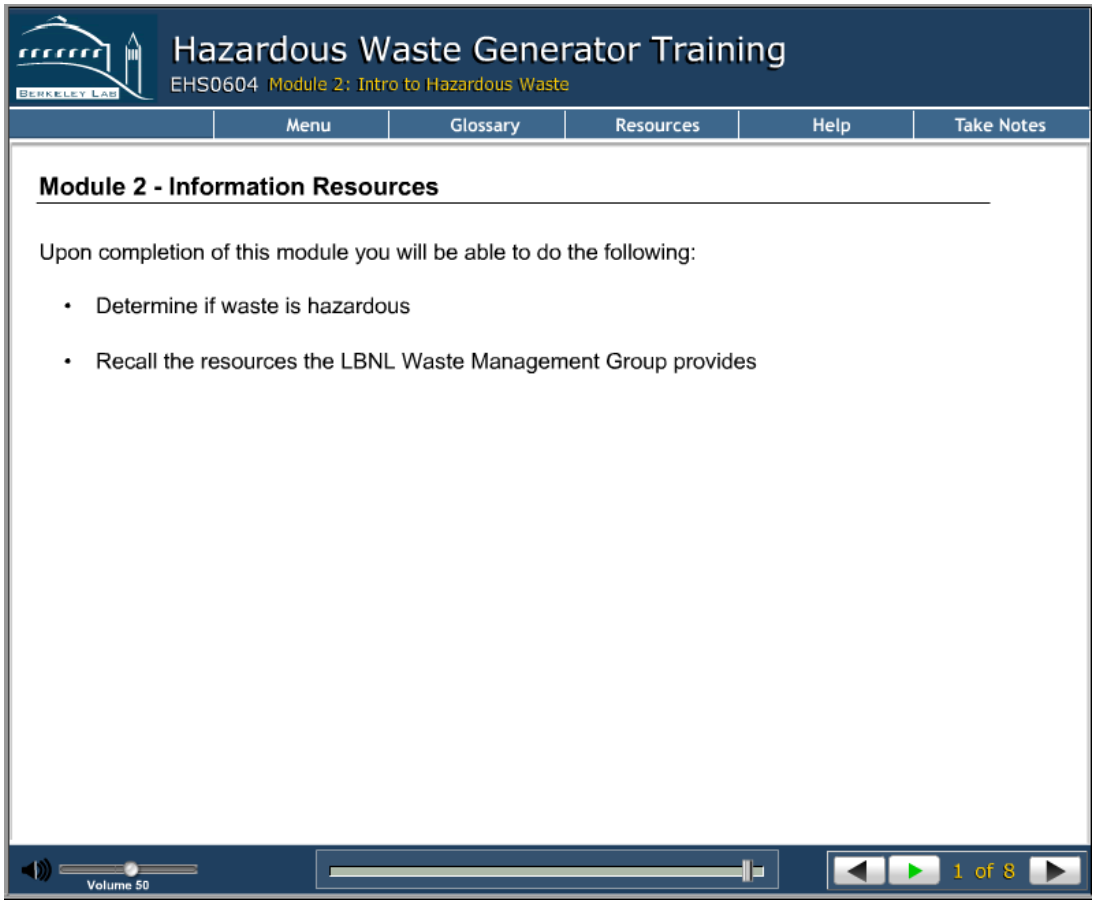
EHS0604 – Hazardous Waste Generator Training
PDF Version
05/11/09



Module 2 – Introduction to Hazardous Waste

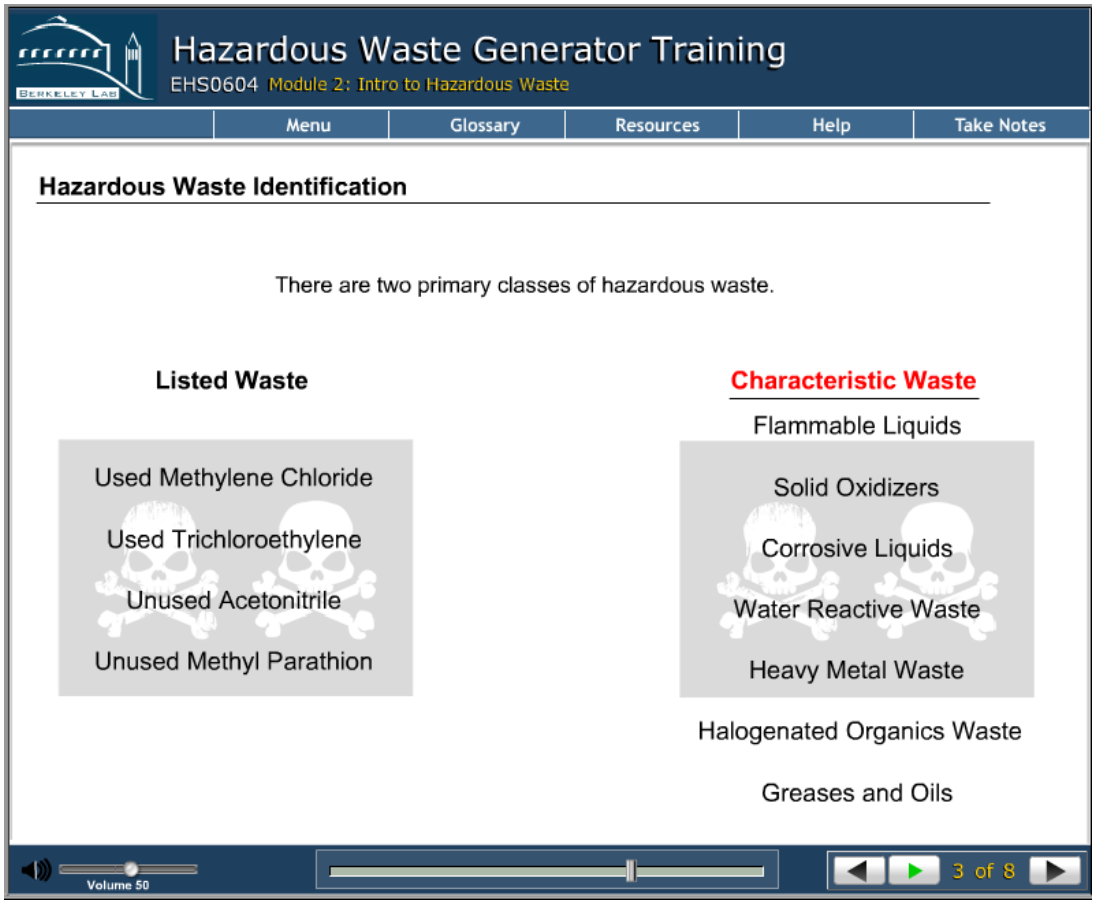


Upon completion of this module you will be able to do the following:

- Determine if waste is hazardous
- Recall resources the LBNL Waste Management Group provides

Hazardous Waste Identification

A waste is a by-product of your work or research that has no further use. A hazardous waste is identified as any waste regulated by the U.S. Environmental Protection Agency, also known as the EPA or the State of California Department of Toxic Substances Control, also known as the DTSC.



There are two primary classes of hazardous waste, Listed Waste and Characteristic Waste.

Listed wastes are wastes from specific processes or wastes that contain hazardous constituent which have been identified by the EPA or DTSC.

Some examples of listed waste include: used Methylene Chloride, used Trichloroethylene, unused Acetonitrile, and Unused Methyl Parathion.

As part of your waste description, be sure to inform the Waste Management Group whether your waste is used or unused. They will make the final decision on whether or not a waste is “listed”.

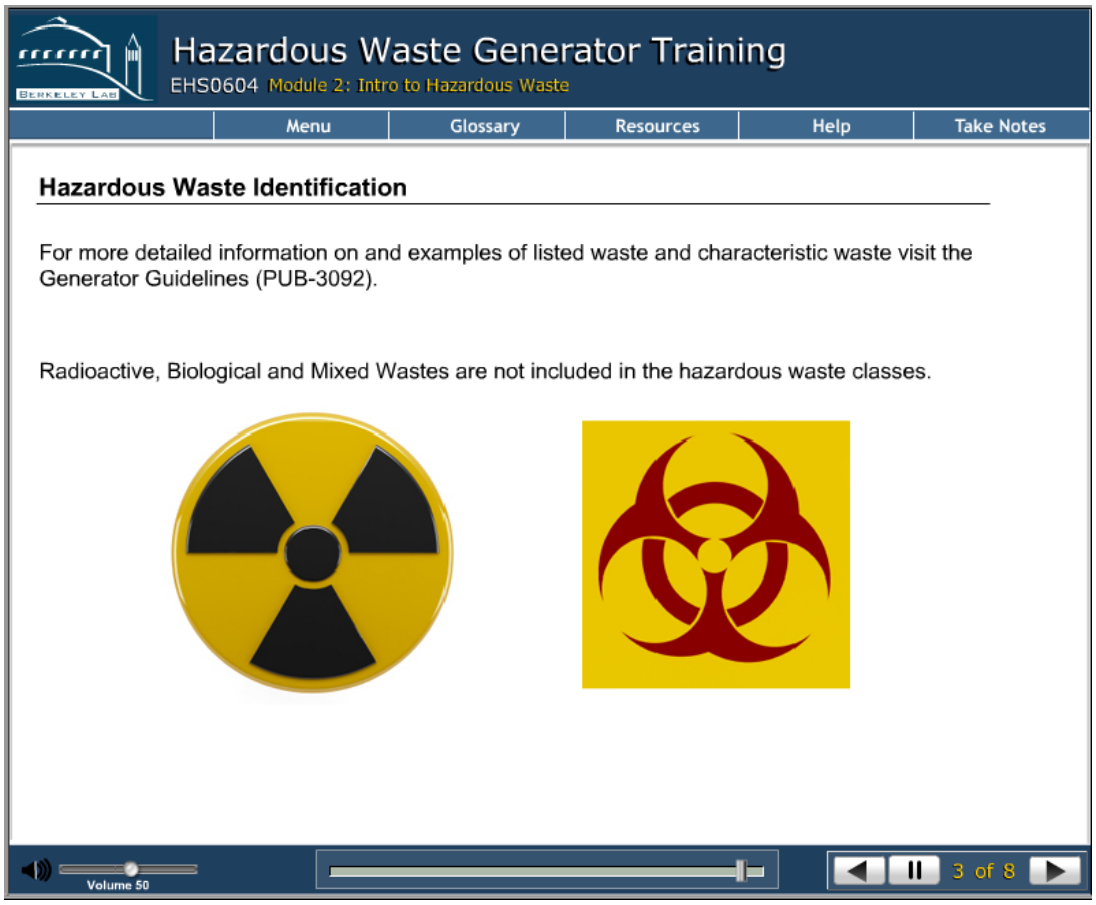
Characteristic waste is considered hazardous based on specific properties of the material. The four basic properties that can define a characteristic waste are ignitability, corrosivity, reactivity, and toxicity.

Some examples of characteristic waste include:

- flammable liquids, such as non-halogenated solvents
- solid oxidizers
- corrosive liquids, such as strong acids and bases

- wastes that react violently with water
- wastes that contain heavy metals and halogenated organics
- greases and oils

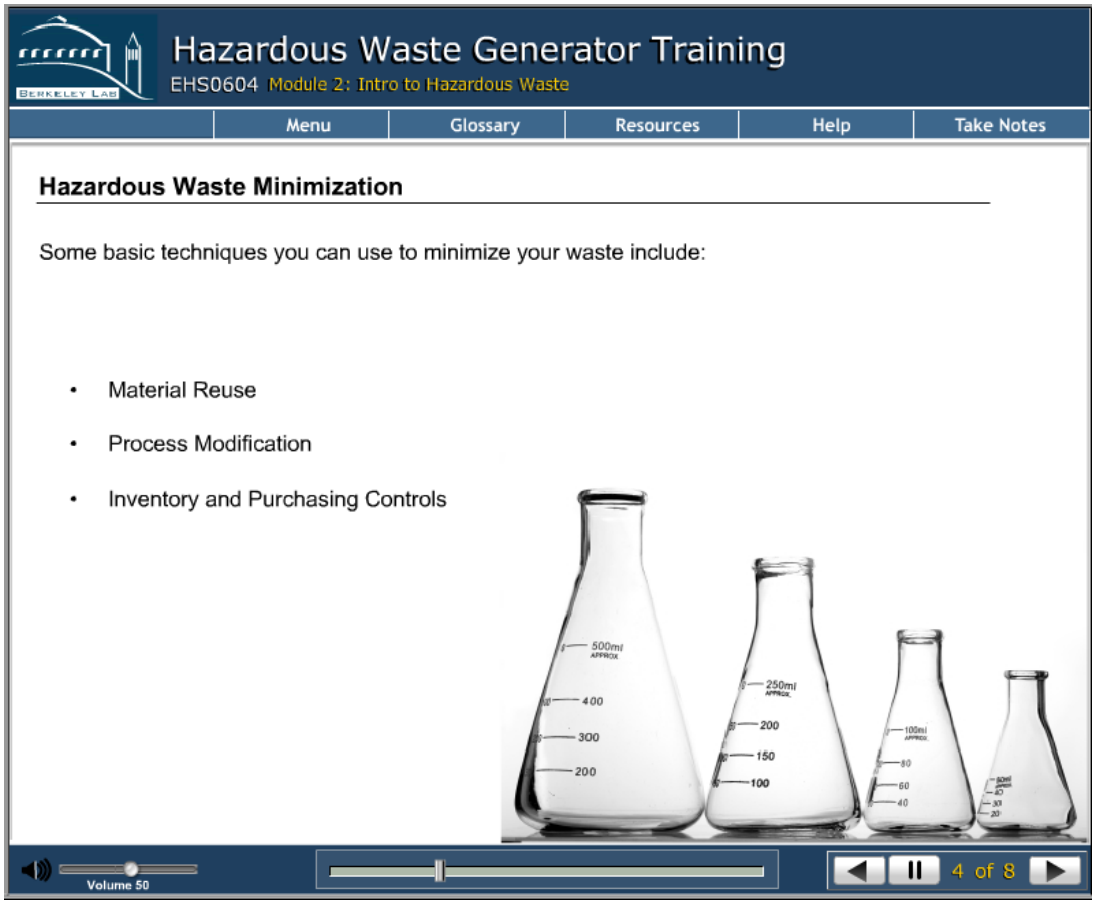
What are some examples of waste you may find in your work area that are hazardous based on the characteristic properties of the material? Write down the name of each waste in the boxes listed under each of the matching characteristic properties. Once you are finished, click on the "see examples" button.



For more detailed information on and examples of listed waste and characteristic waste visit the Generator Guidelines (PUB-3092).

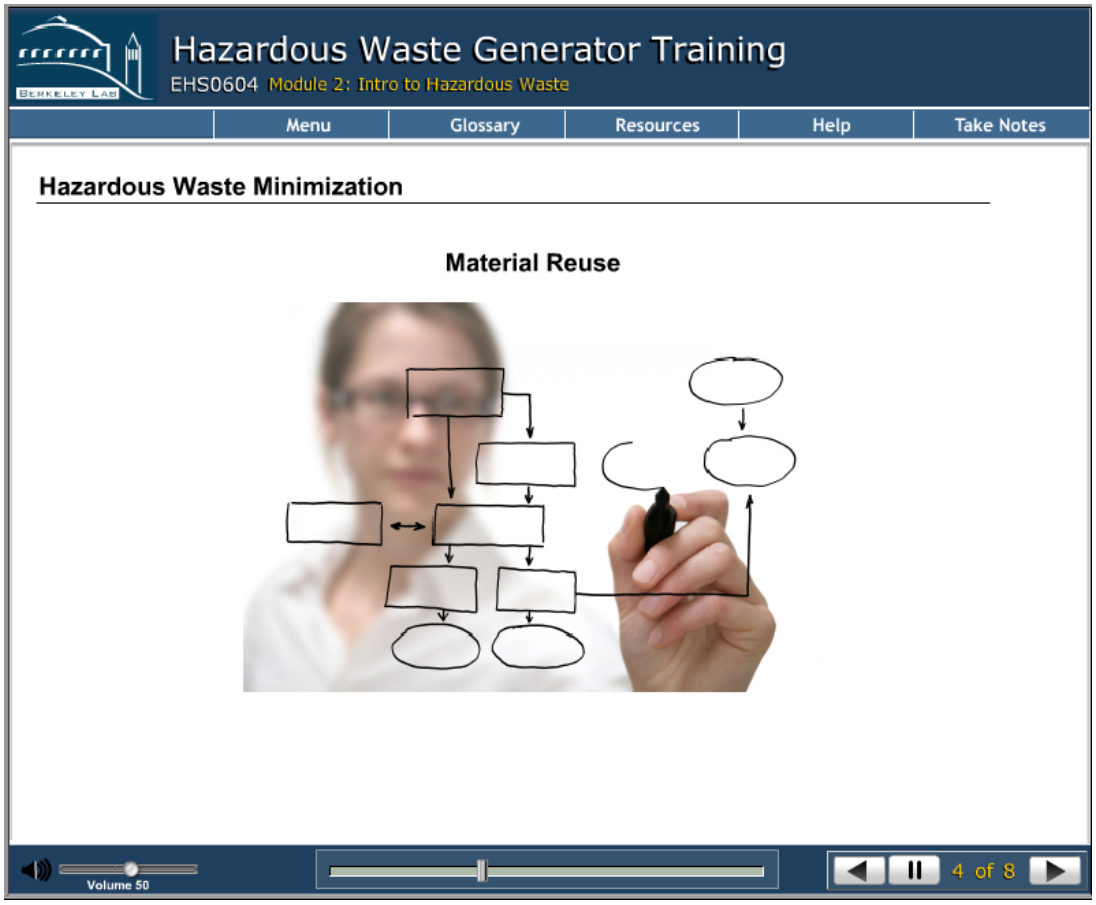
Radioactive, Biological and Mixed Wastes are not included in the hazardous waste classes. These wastes must be handled according to different regulations and require additional training.

Hazardous Waste Minimization

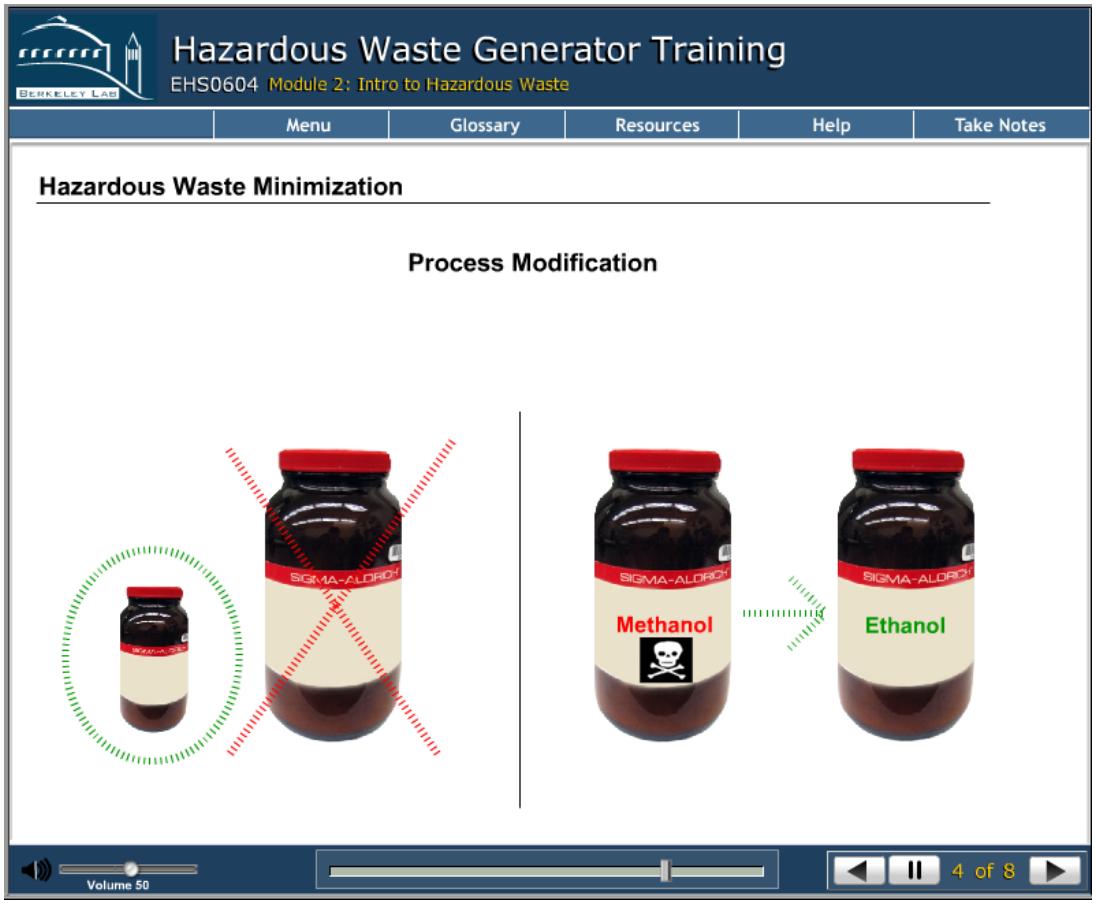


It's important for you to always keep in mind that it is safer and more cost effective to reduce waste at the source rather than to manage it for disposal. Some basic techniques you can use to minimize your waste include:

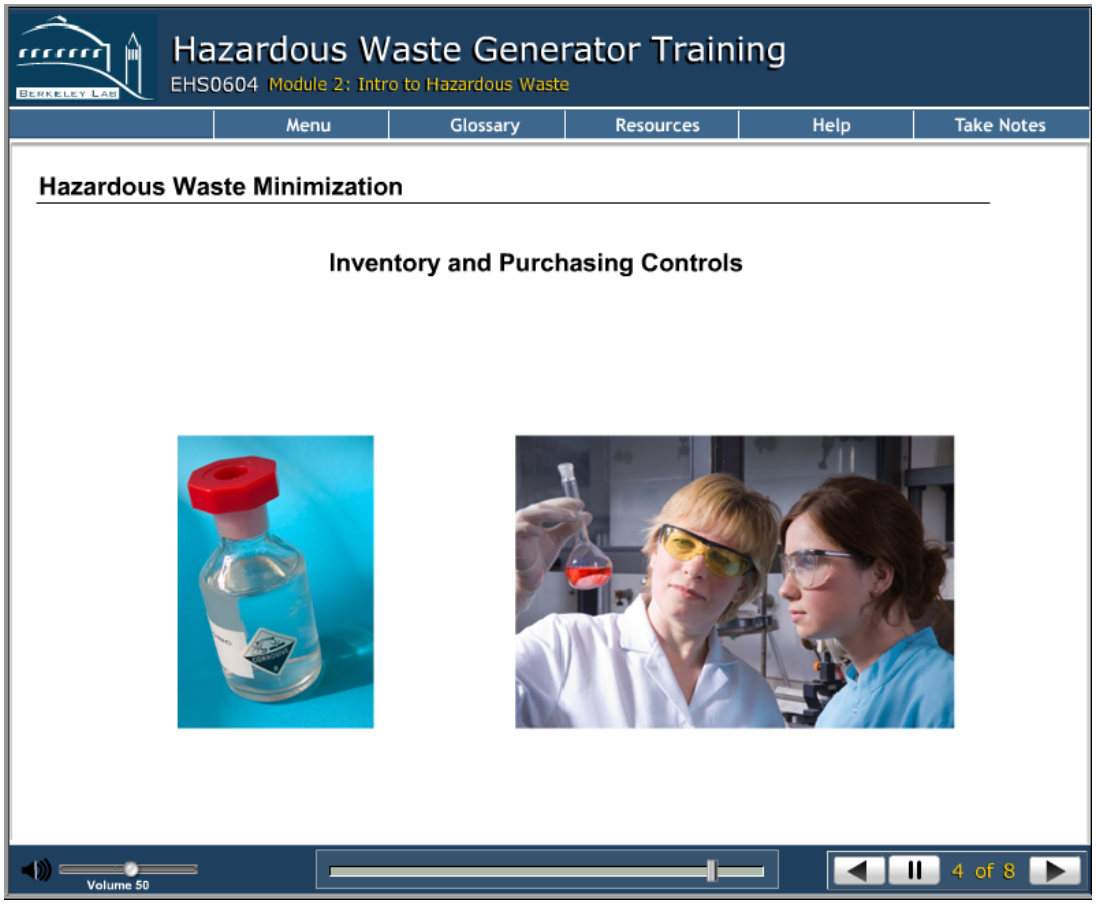
- Material Reuse
- Process Modification
- Inventory and Purchasing Controls



Material reuse can be easily achieved by looking over your current process and seeing if you could reuse some of the chemicals you have already used. For instance, if you have a process that contains two rinses using the same type of chemical, if possible, why not reuse the chemical you used for the second rinse on the first rinse next time you run the process.



Process modification can be achieved by evaluating your current process and determining if smaller chemical quantities could be used instead of larger quantities or if hazardous chemicals could be substituted with less hazardous or nonhazardous chemicals.



Inventory and purchasing controls can be can be achieved by buying only what you need or borrowing the chemicals you need from a co-worker who may have extra to share.

All three of these strategies are great ways to minimize your hazardous waste.

Waste Management Group

The LBNL Waste Management Group provides a wide range of services to help you dispose of your waste properly. These services help ensure compliance with local, state, and federal regulations. The primary concern of LBNL in all waste management operations is the health and safety of Lab personnel and the protection of the public and the environment.

Because you will be generating hazardous waste, the Waste Management Group has provided you with many resources, such as:

- A Waste Generator Assistant assigned to your division to help you with all your waste management operations and answer any questions you may have throughout the process
- The Waste Generator guidelines clearly stated in PUB3092, and
- All the forms you will need to properly manage hazardous waste

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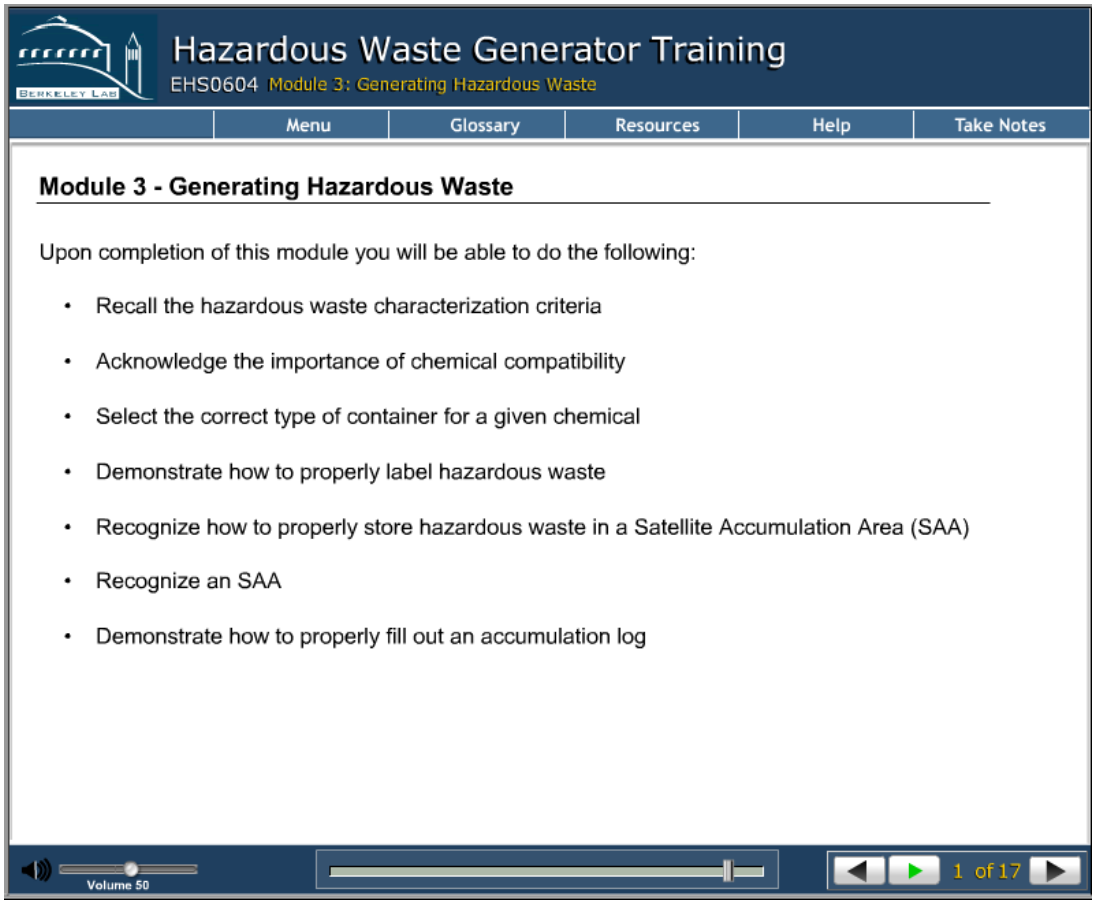
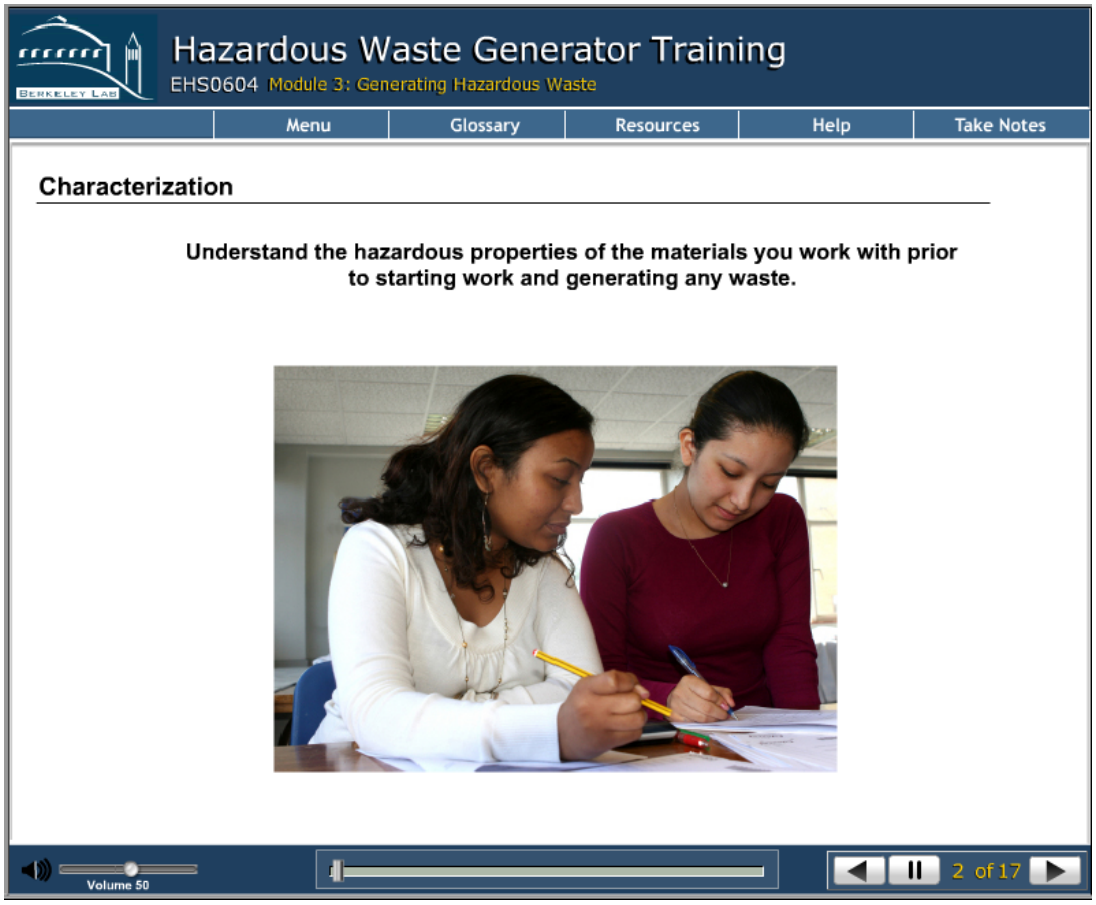
Module 3 – Generating Hazardous Waste



Upon completion of this module you will be able to do the following:

- Recall the hazardous waste characterization criteria
- Acknowledge the importance of chemical compatibility
- Select the correct type of container for a given chemical
- Demonstrate how to properly label hazardous waste
- Recognize how to properly store hazardous waste in a Satellite Accumulation Area (SAA)
- Recognize an SAA
- Demonstrate how to properly fill out an accumulation log

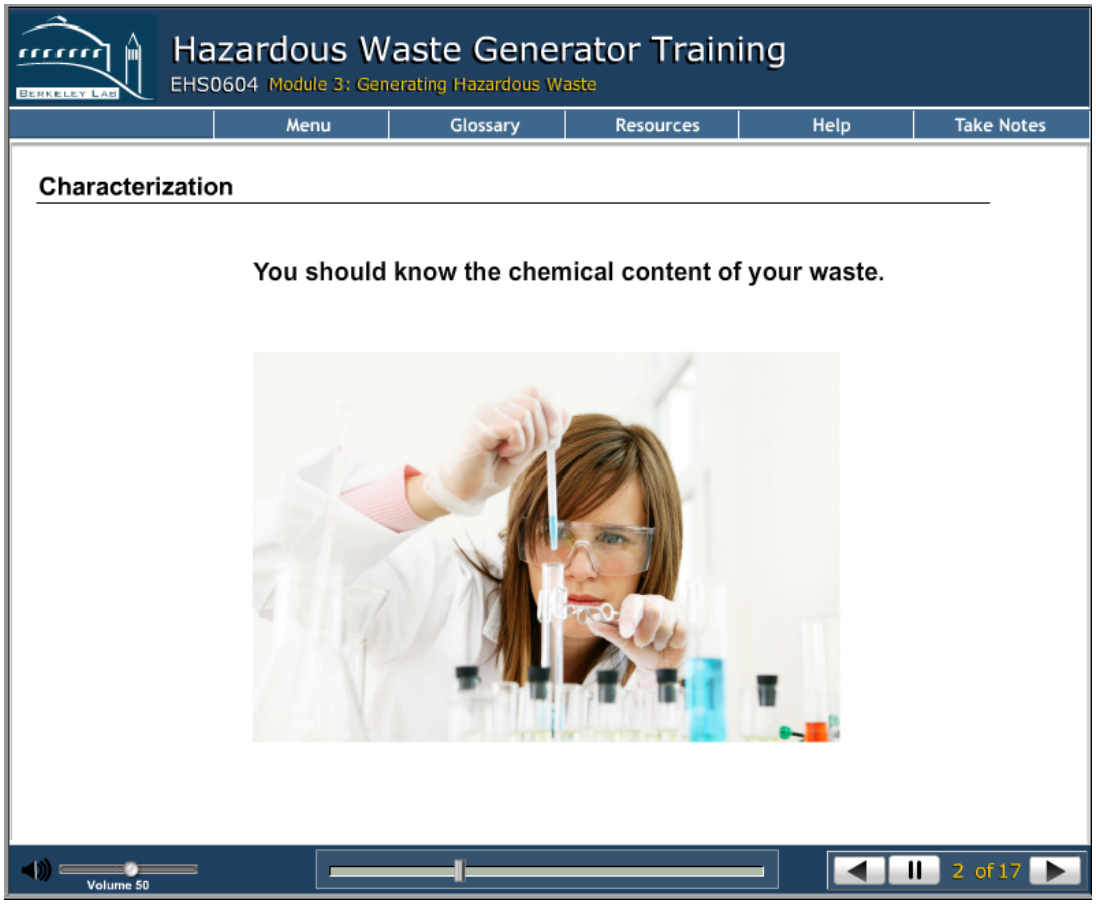
Characterization



In order to work safely and determine if you may be generating a hazardous waste, you must first understand the hazardous properties of the materials you work with prior to starting work and generating any waste. You should already have this knowledge from your completion of Chemical Hygiene and Safety Training. Never work with any material unless you understand the hazardous properties of that material.

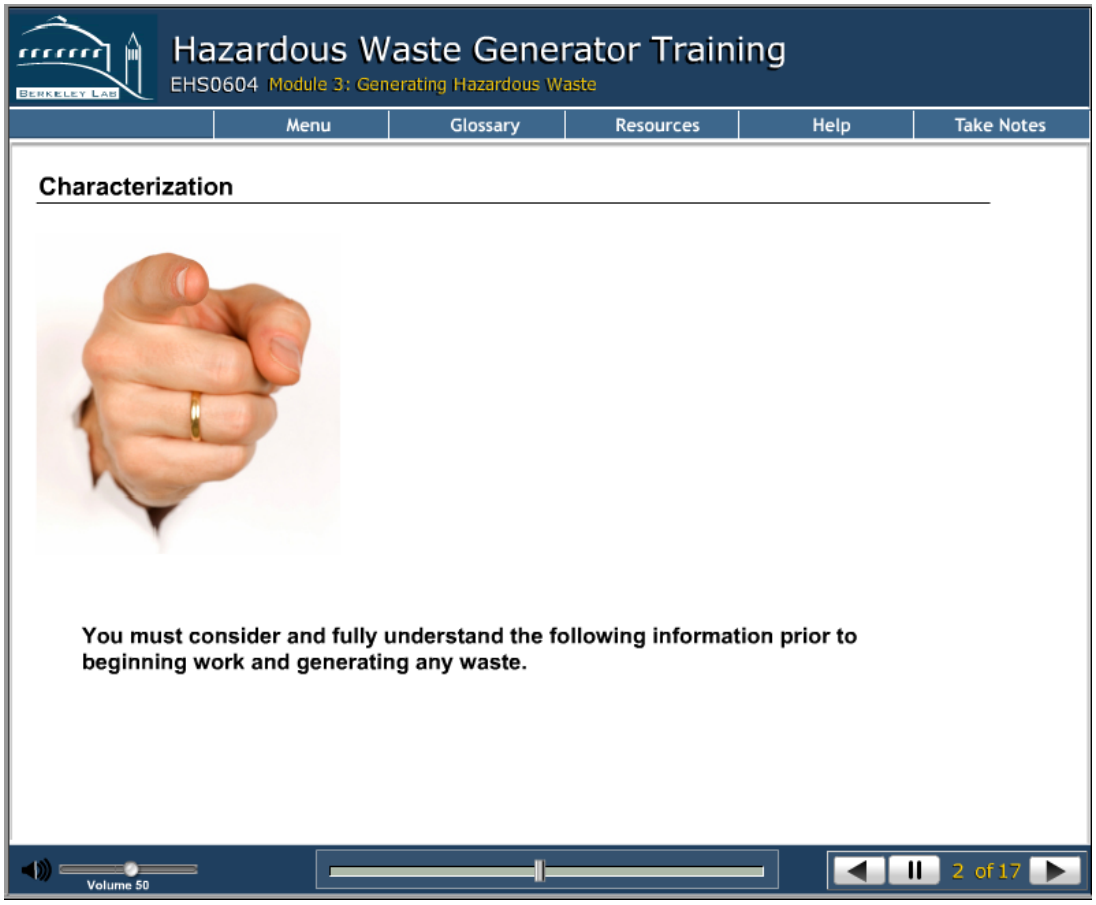
All waste generated at LBNL must go through a process call Characterization. Characterization helps identify the characteristics of waste, which ultimately helps you determine if your waste is hazardous or nonhazardous. It is your responsibility as a waste generator to characterize your waste.

The first step in determining if you have a hazardous waste is to understand the materials that go into your process, how the materials are used, and how they flow into and out of the process.



Because most chemical waste is generated during specific processes in the course of your activities or experiments, you should know the chemical content of your waste. This is referred to as “Process Knowledge”.

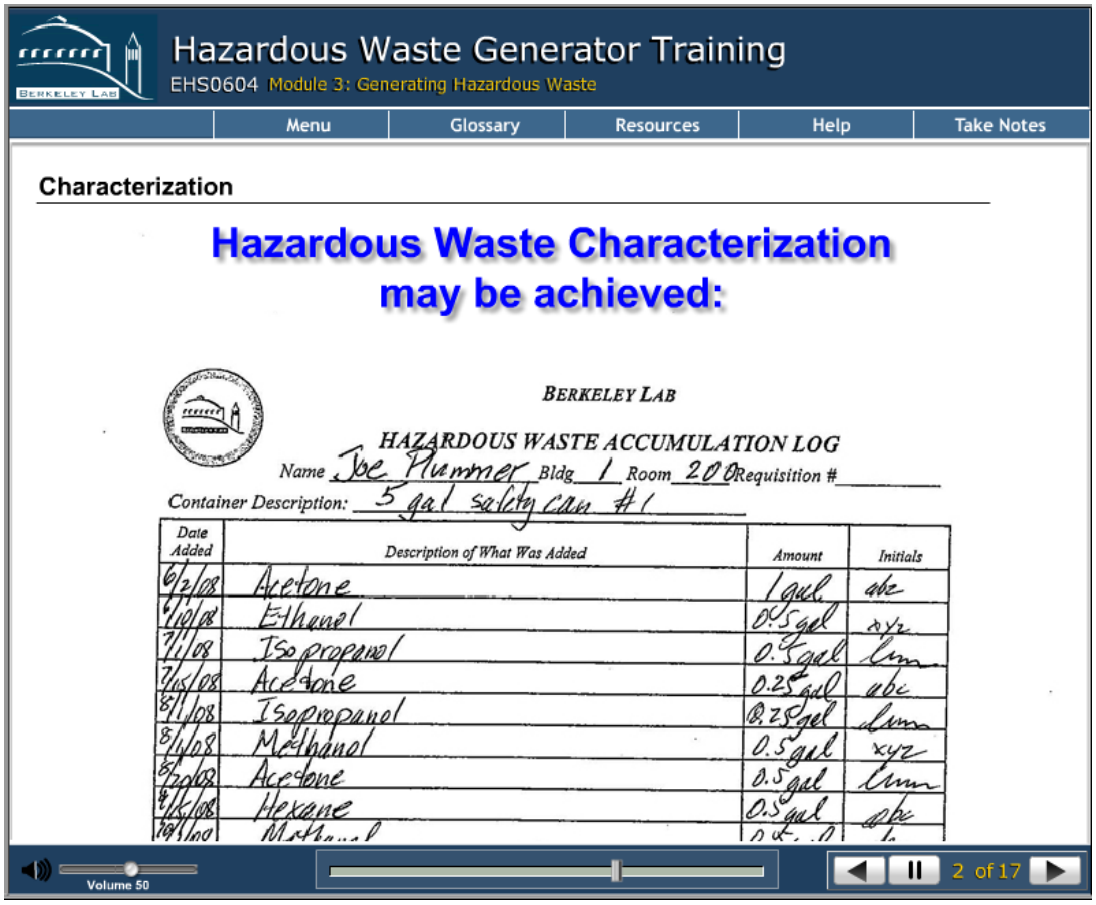
In fact you are recognized as a more accurate source than certified analytical laboratories for specifying many of the components and their concentrations in a given waste sample. Most hazardous waste generated at LBNL can be characterized through process knowledge. However, this approach must be supported by precise, documented information.



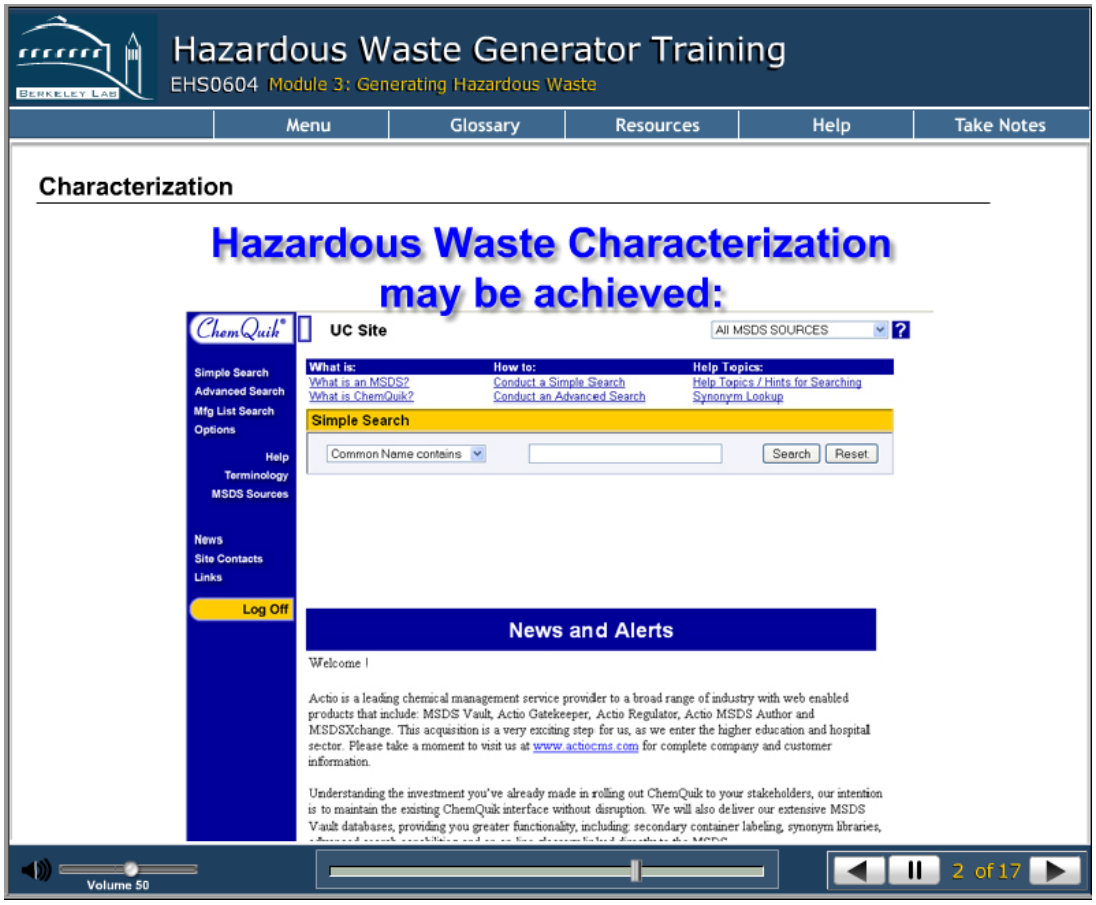
To use and justify process knowledge for characterization, you must consider and fully understand the following information prior to beginning work and generating any waste:

- Know the hazardous properties of all chemicals to be used,
- Have a thorough understanding of how the chemicals will be used,
- Understand the chemistry of the reaction to determine if hazardous chemicals will be produced where none existed before, and
- Know whether the process will convert hazardous chemicals to nonhazardous ones

Hazardous waste characterization may also be achieved in the following ways:

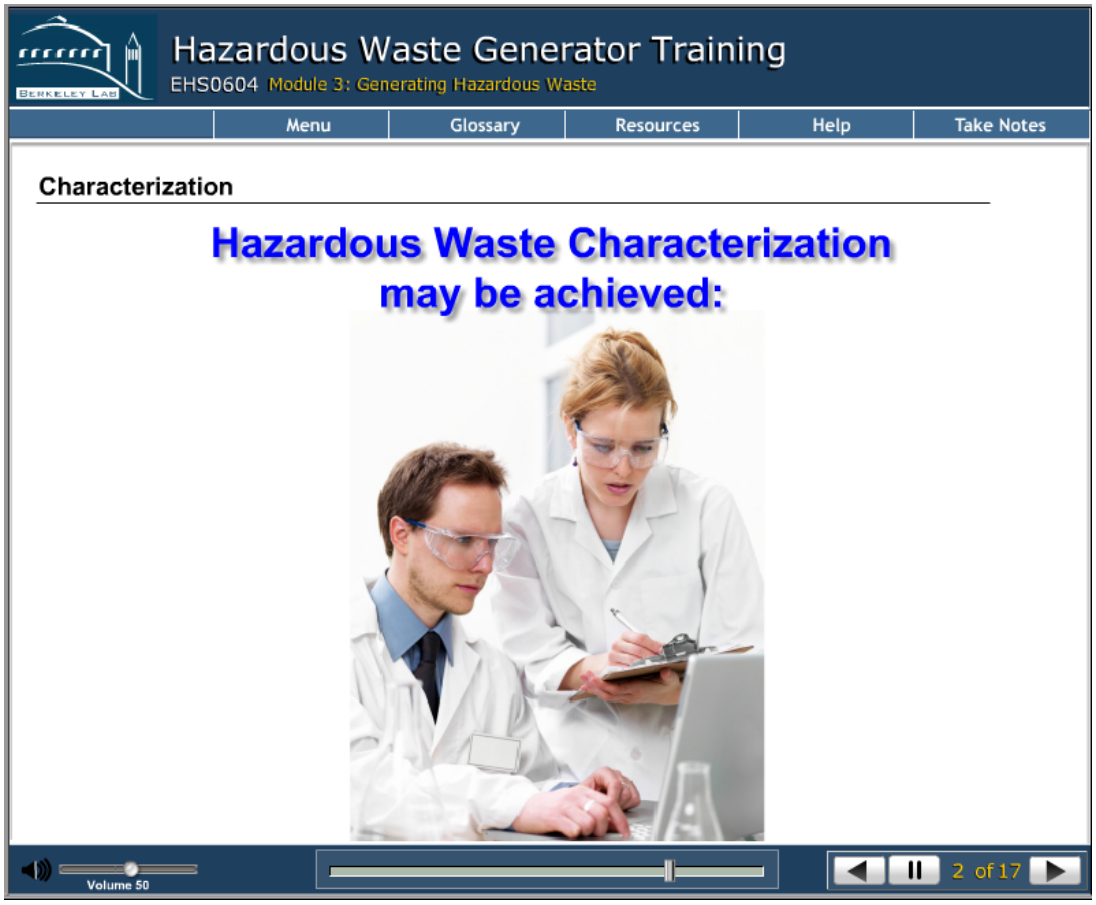


- By maintaining accumulation logs for repetitive additions of compatible wastes to one container. The logs contain an entry each time a chemical is added to a container.

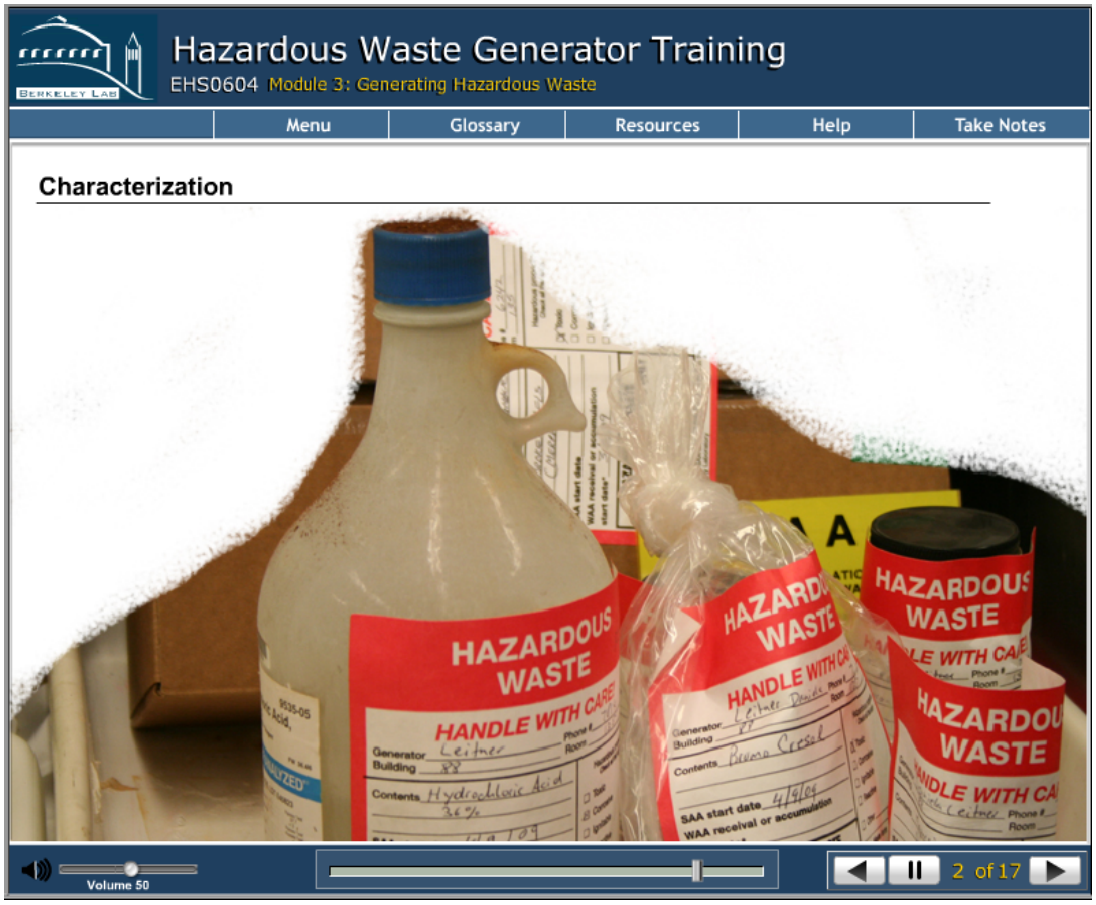


- By consulting an MSDS for each hazardous component, and listing quantitative information for all hazardous and nonhazardous components.

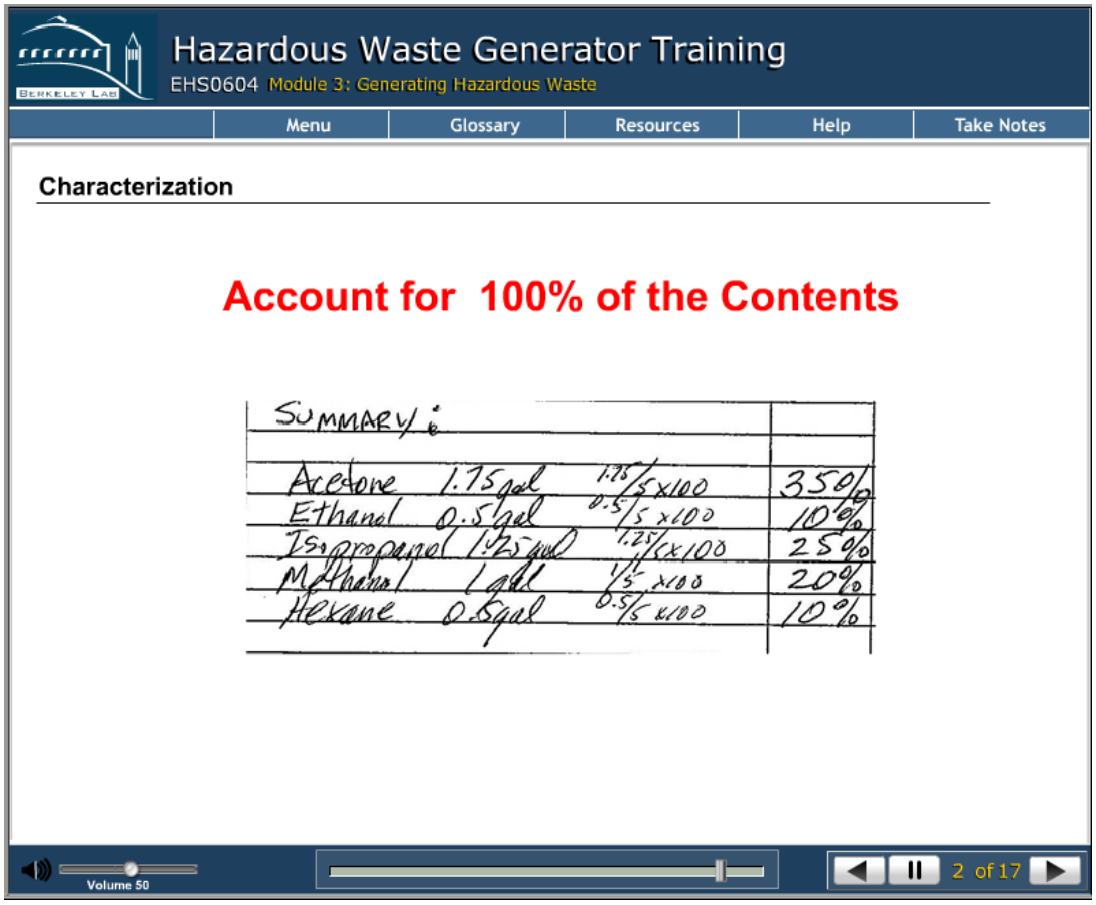
- By developing a generic description when the material has a well-known composition, and



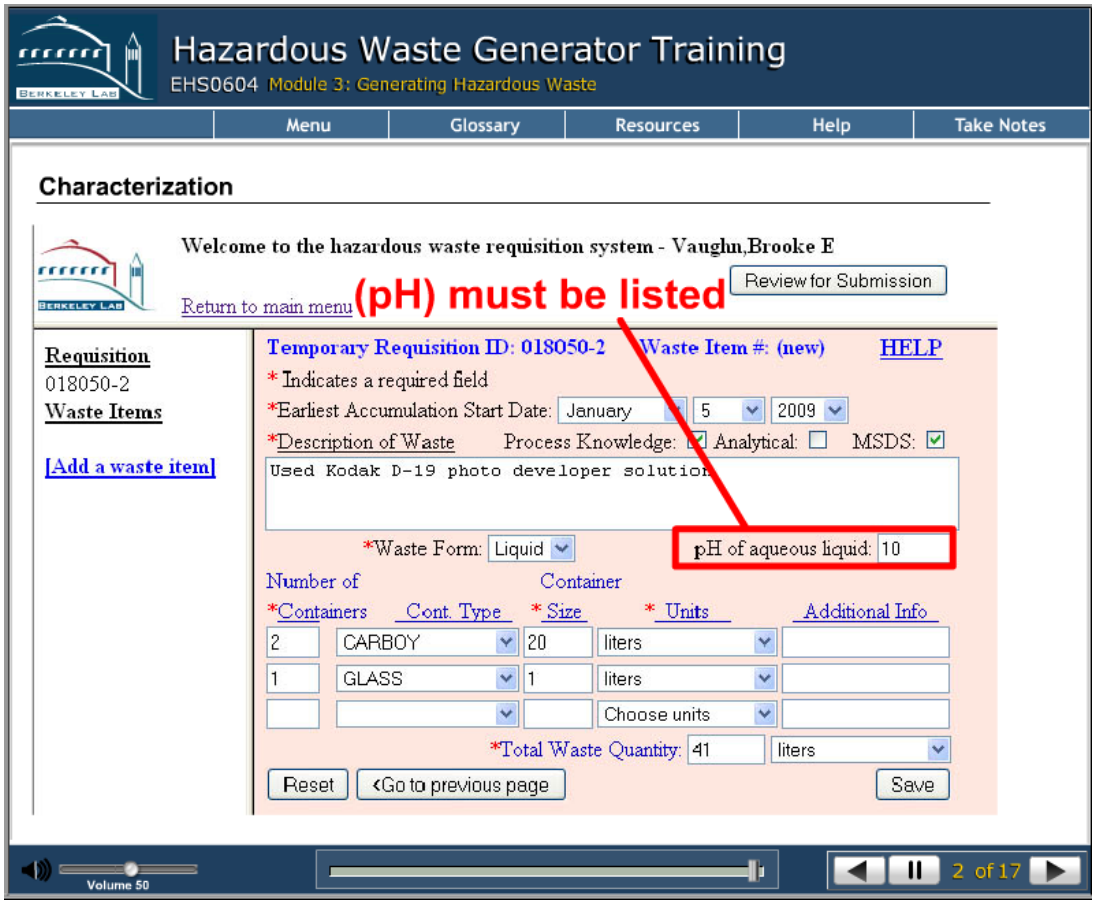
- By using analytical results from a certified laboratory on known, unchanging waste streams, or by using complete analytical results from a certified laboratory for each waste.



Once you have determined that your waste is hazardous and have identified the types of hazards, all hazardous and nonhazardous components must be fully identified and documented.

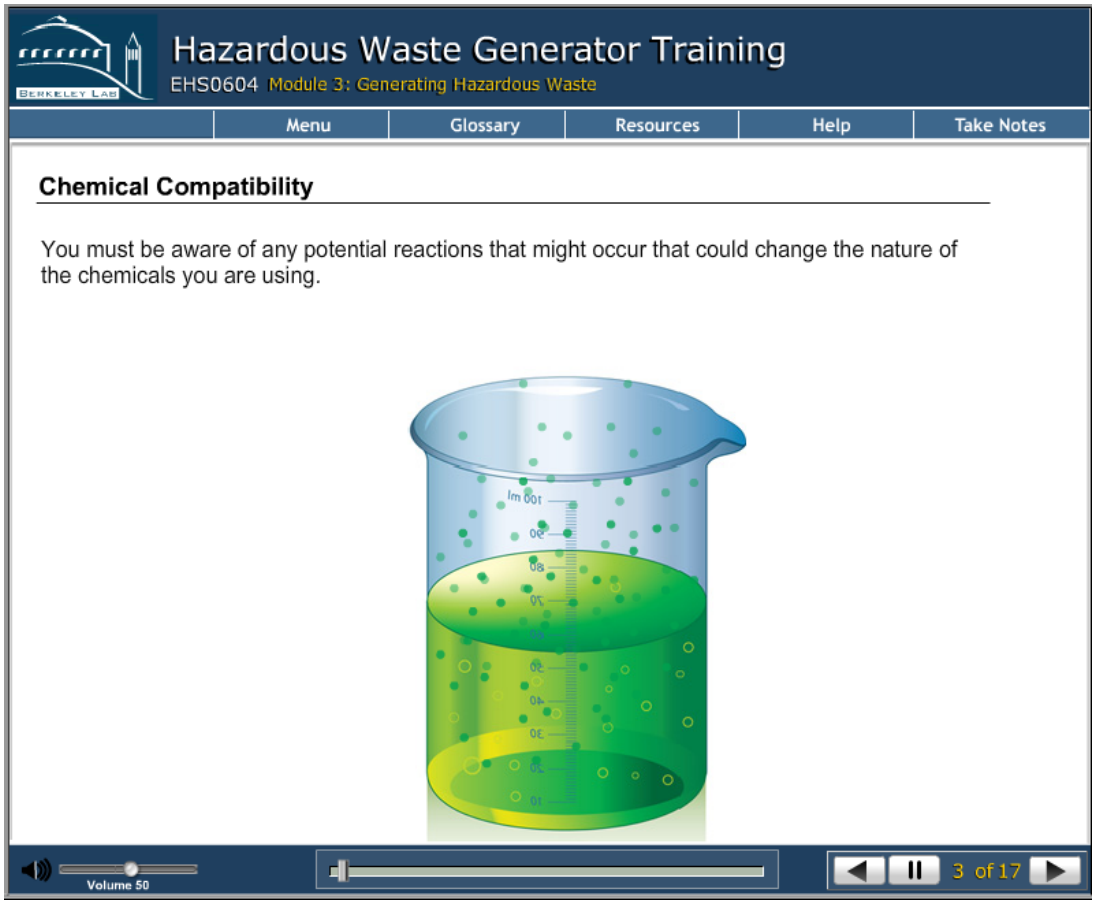


It is important to account for 100% of the contents of each waste container, including trace amounts of known hazardous components or other materials of concern (such as nanomaterials).



A common problem is the failure to recognize that you are required to report the pH for all aqueous solutions.

Chemical Compatibility



You must be aware of any potential reactions that might occur that could change the nature of the chemicals you are using. It is quite possible that your process could change hazardous materials into materials that are no longer hazardous. Though less common, you should also be aware of the potential to create hazardous materials during your process.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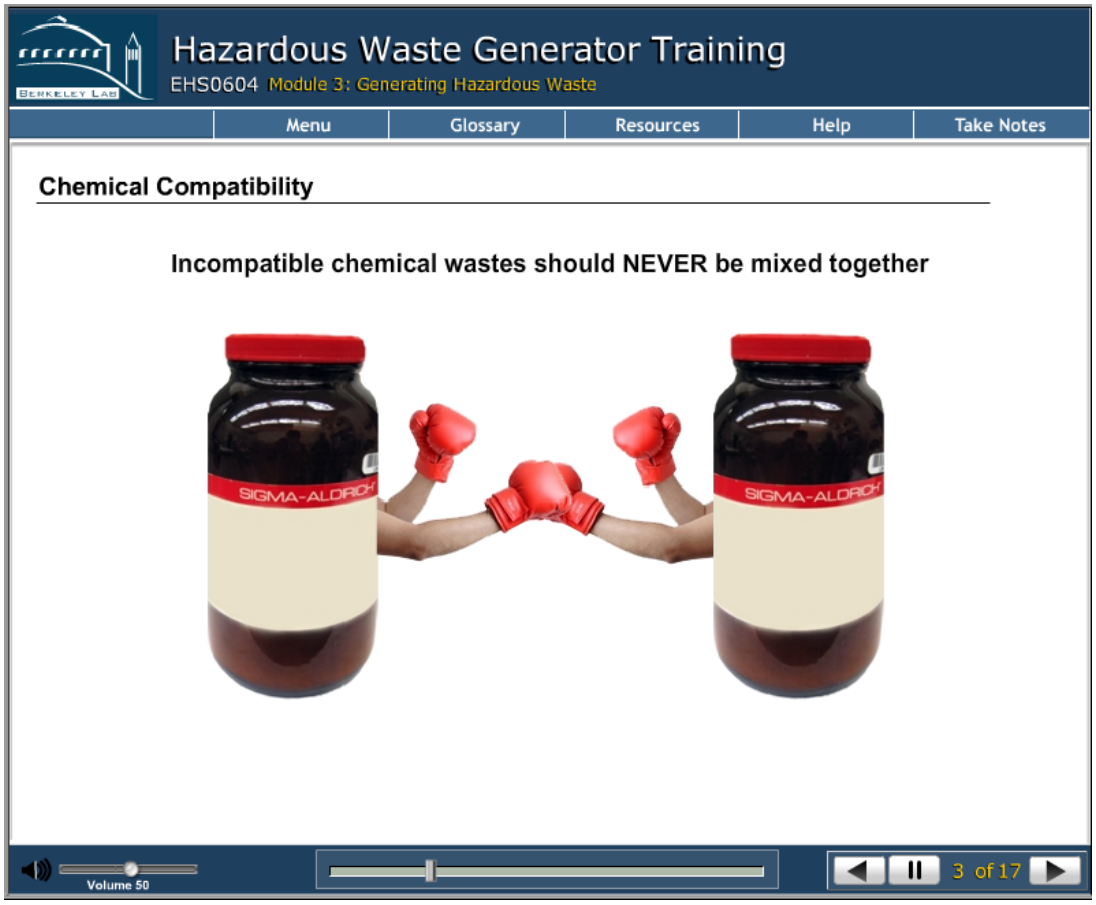
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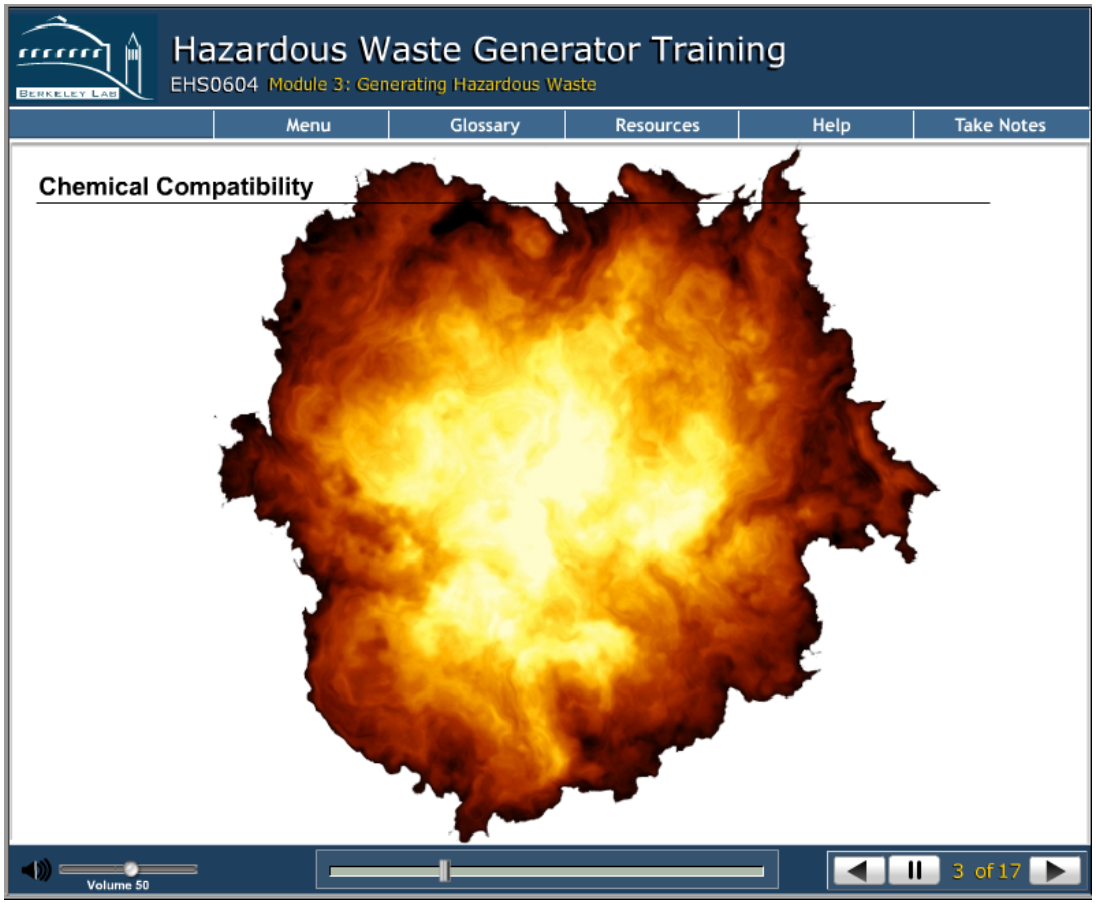
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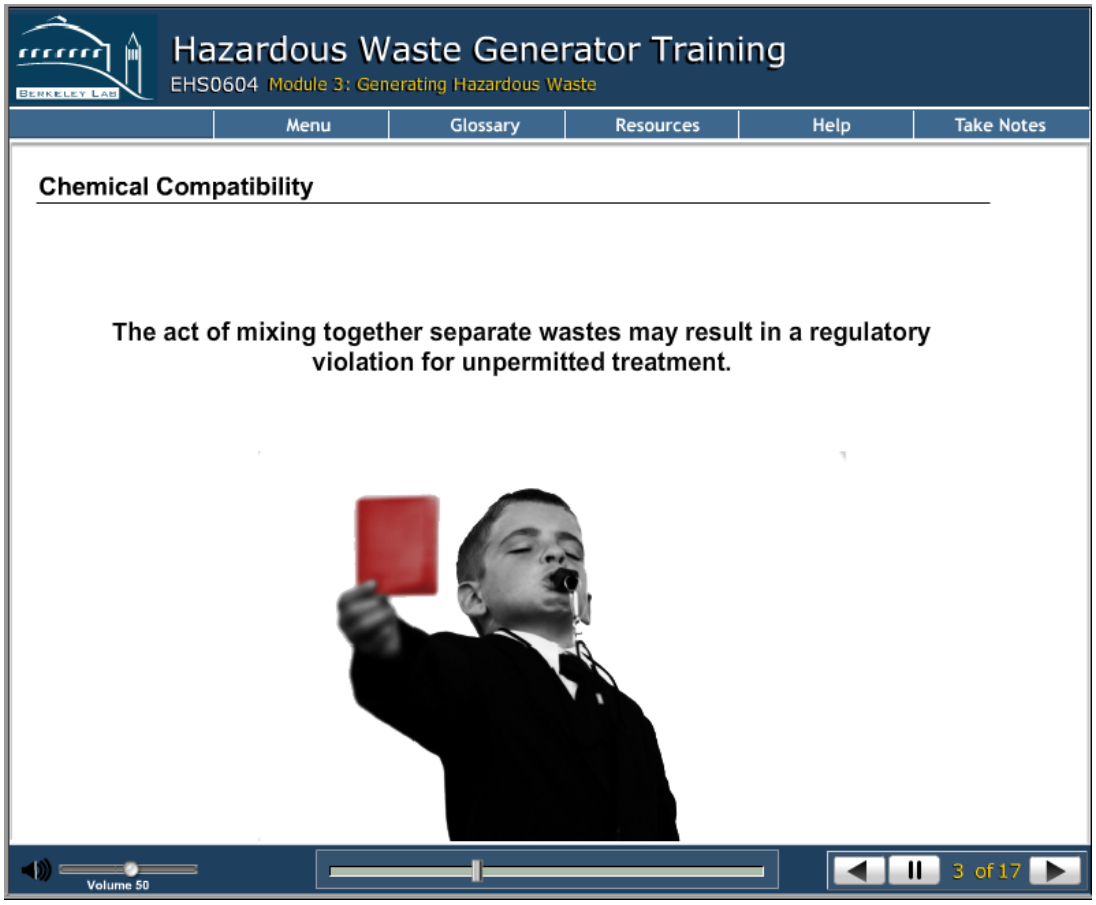
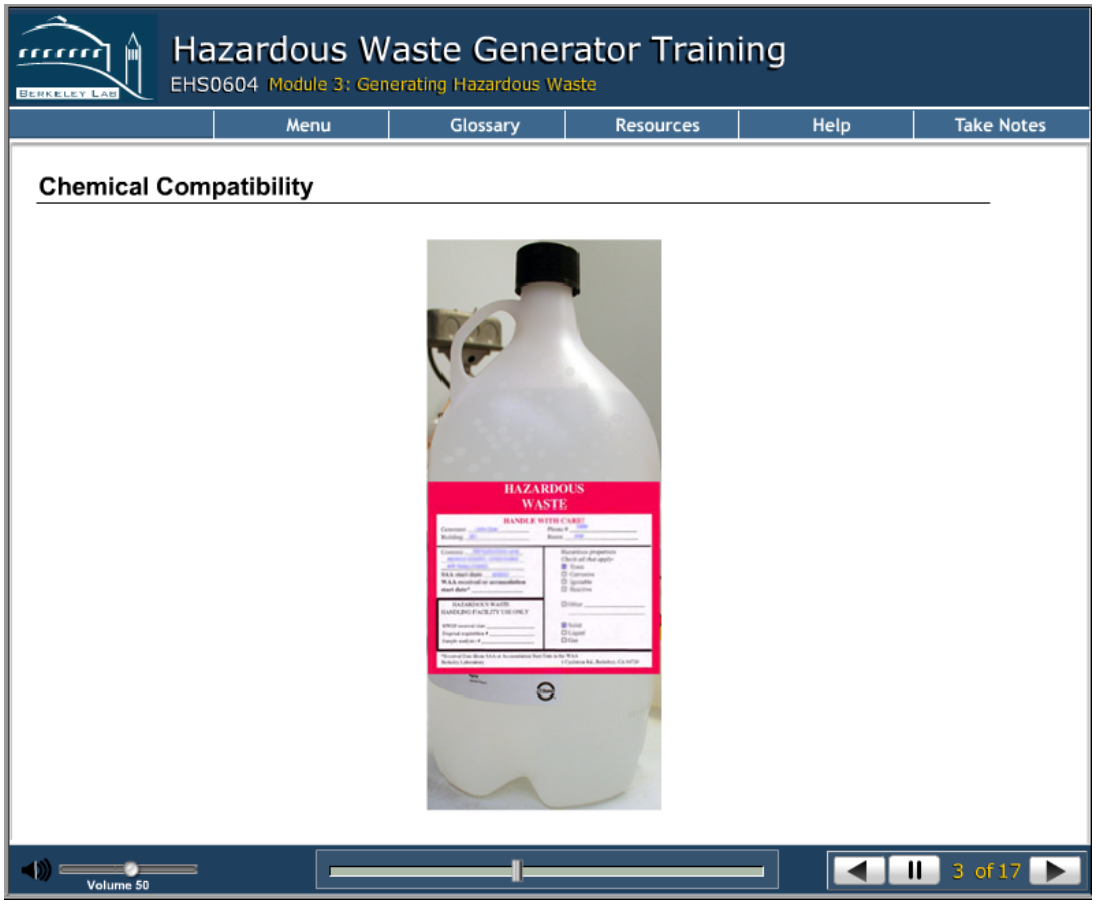
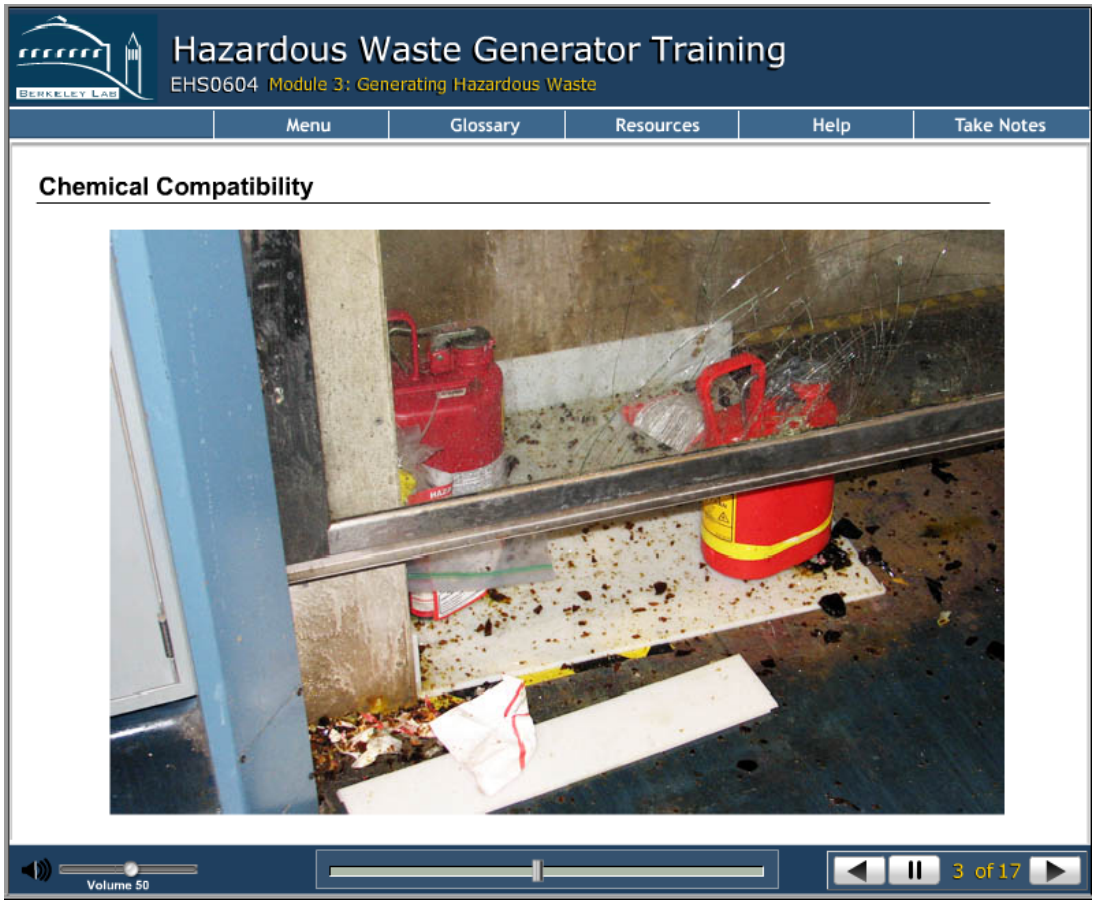


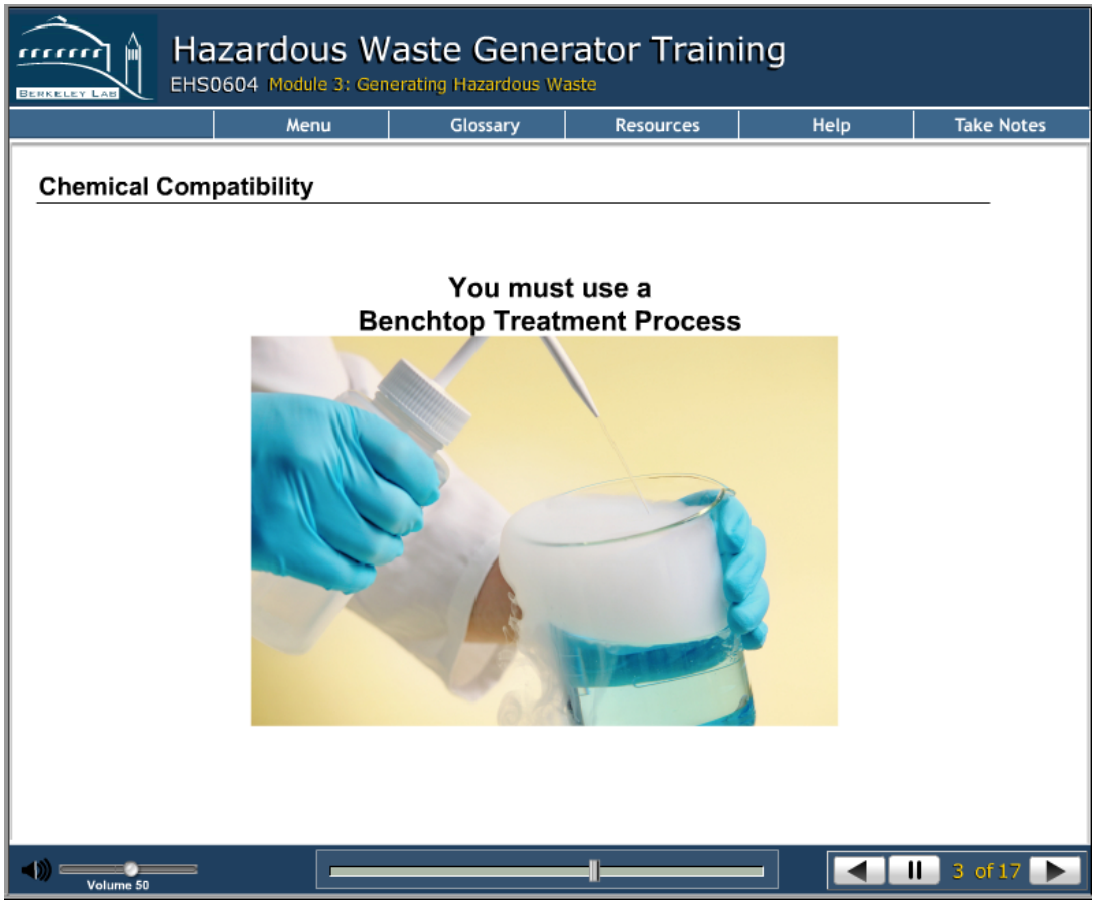
Incompatible chemical wastes should never be mixed together. Uncontrolled chemical reactions may endanger your safety and the safety of those around you. The act of mixing together separate wastes may result in a regulatory violation for unpermitted treatment.



You cannot store waste that will continue to react and build up pressure inside a waste accumulation container.



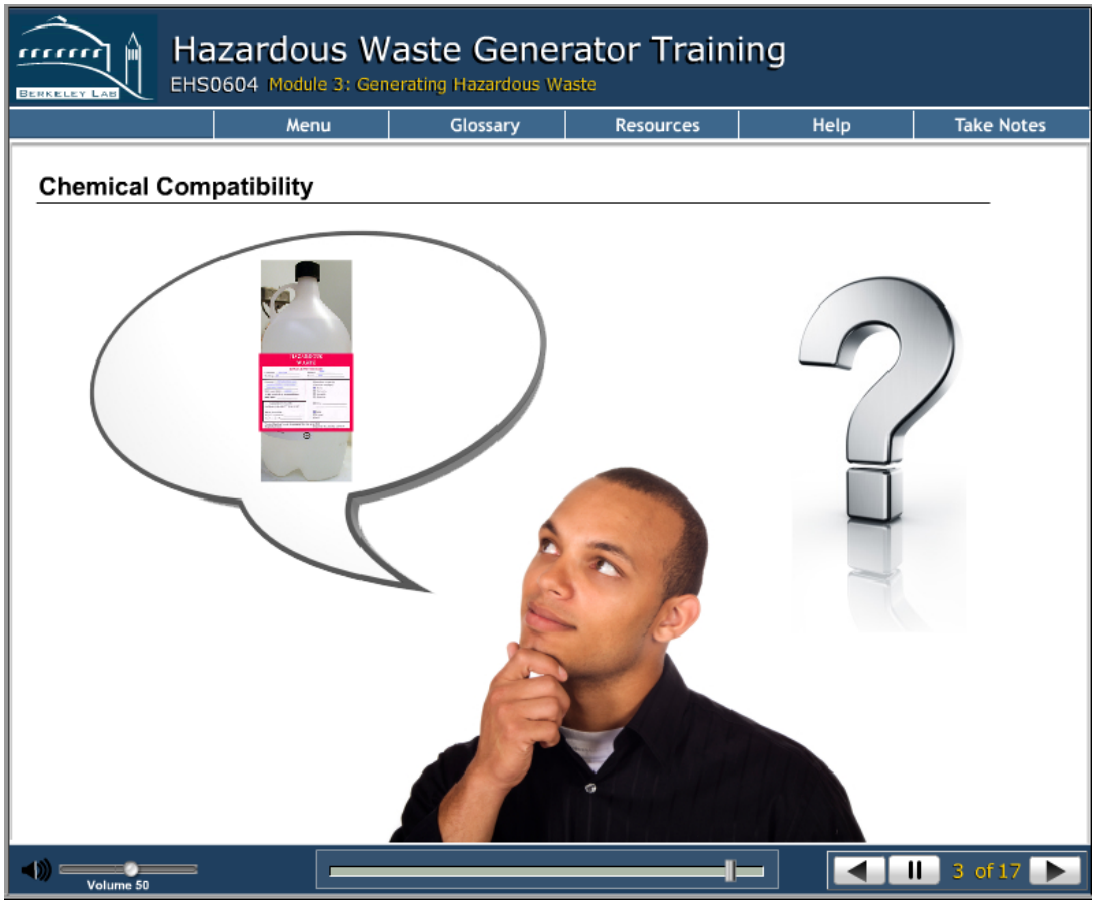
Such storage can result in rupture or explosion of the container.



If your experimental process creates a mixture that continues to react once that part of the process is complete, you must use a Benchtop treatment process to quench the ongoing reaction prior to adding waste to your container.

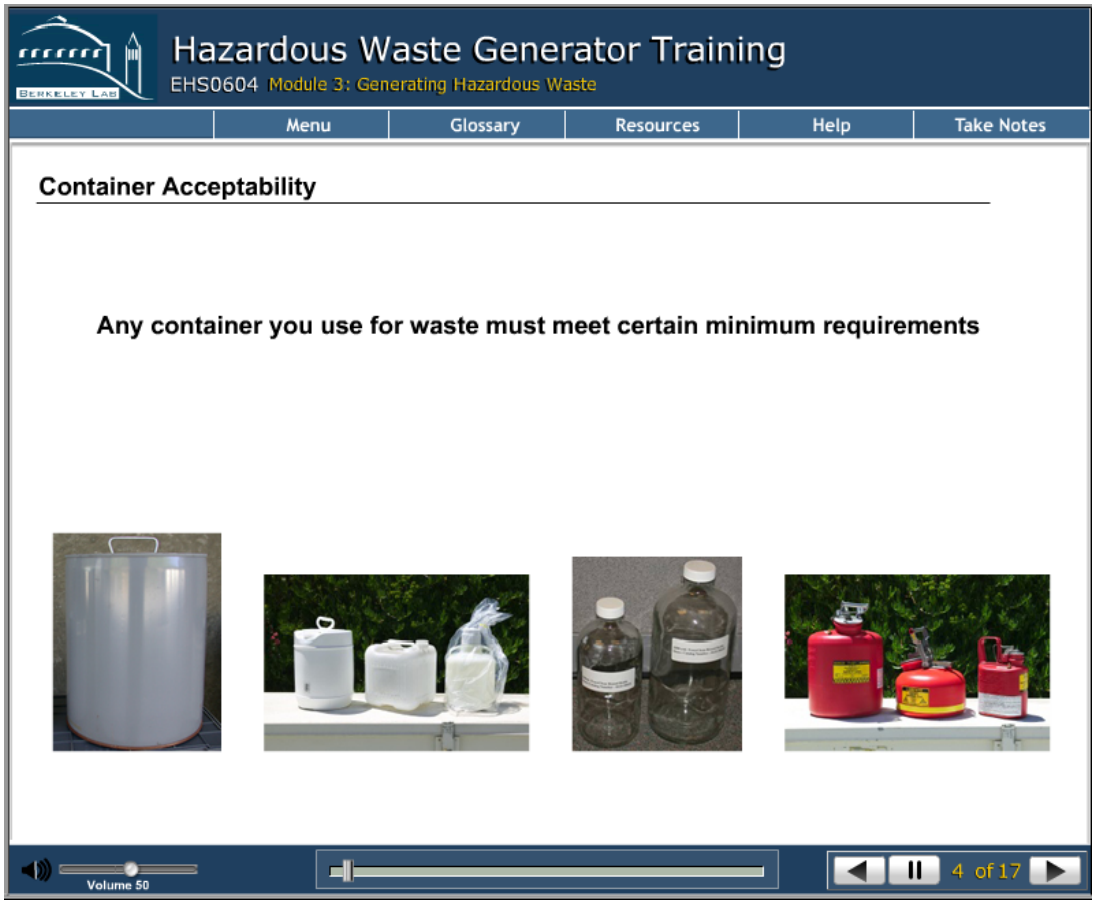
If you generate this type of waste, consult with your generator assistant on the required steps for using benchtop treatment.

This treatment process must be thoroughly documented and you must get approval from the Waste Management Group prior to using benchtop treatment. Vented caps are prohibited on waste containers so the necessary steps to stop the material from continuing to react are critical to safe storage.

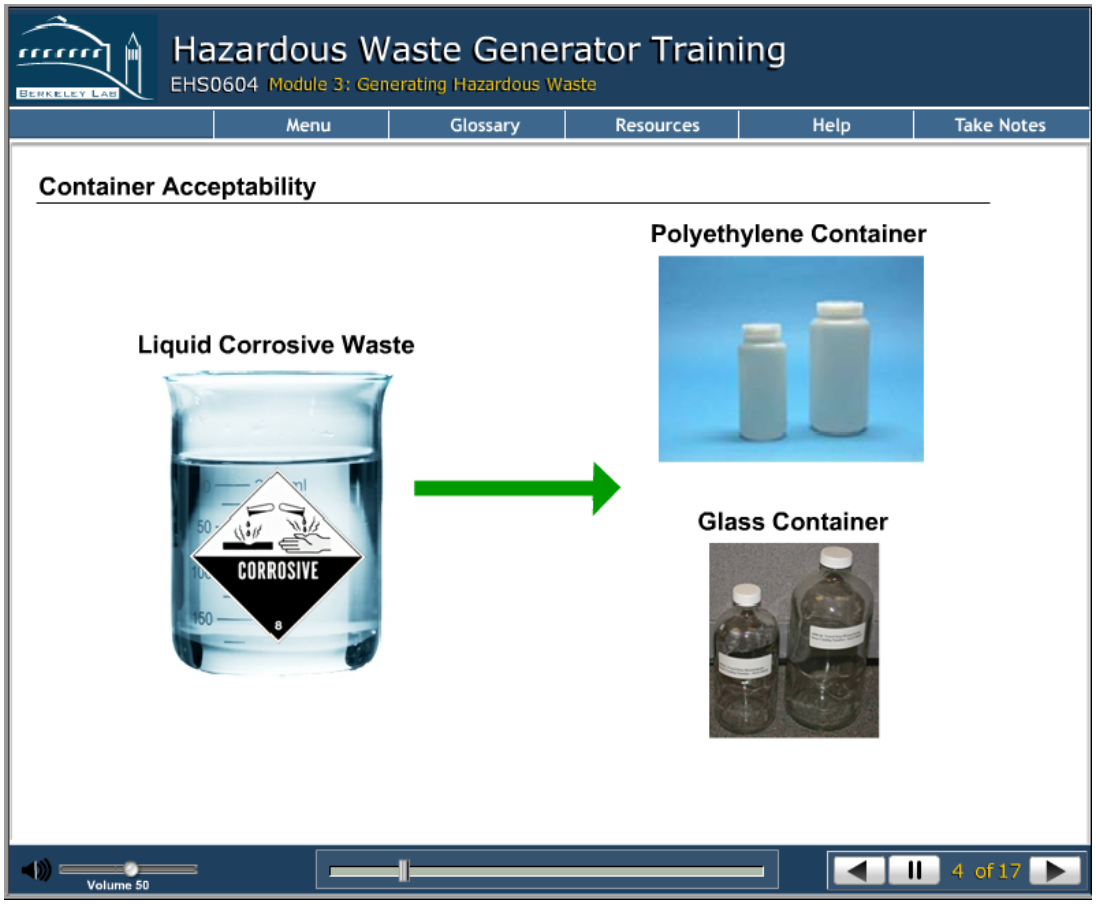


If you are unsure whether to add a particular chemical mixture to your waste container contact your generator assistant for guidance.

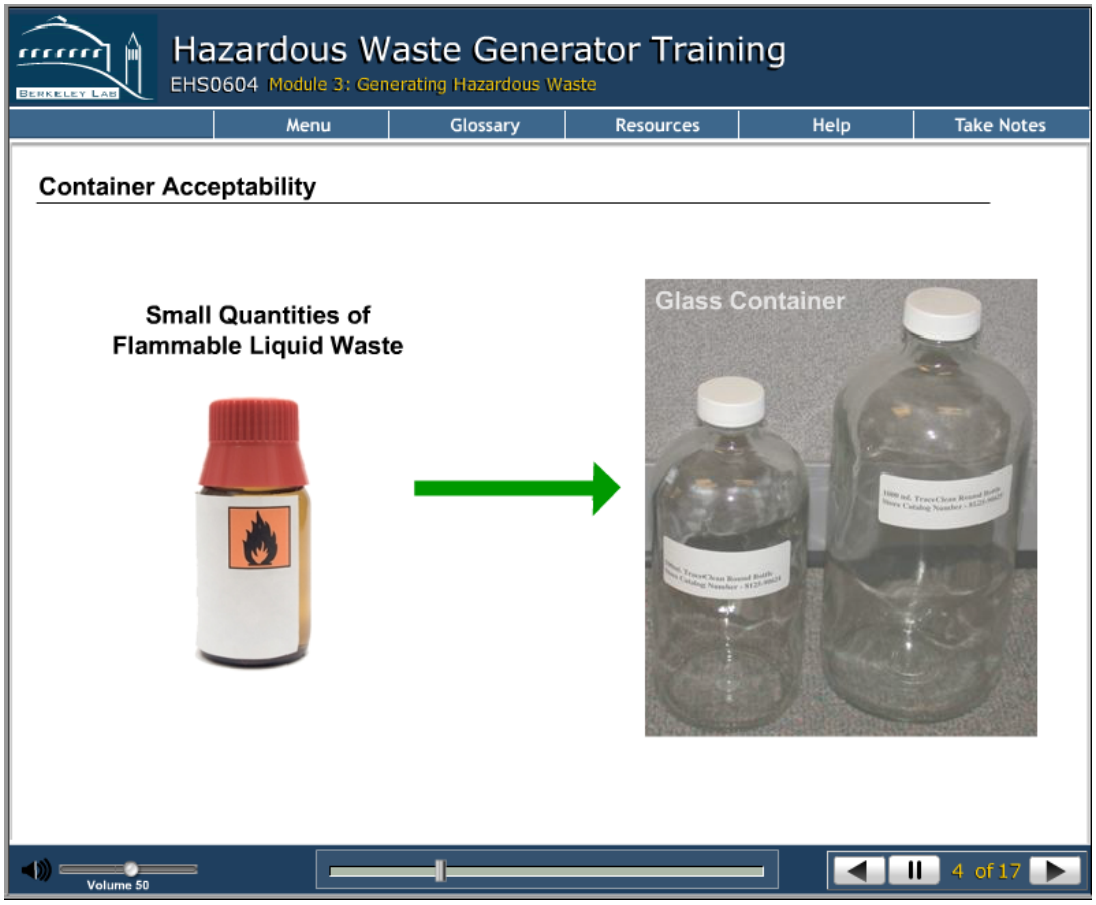
Containers – Acceptability



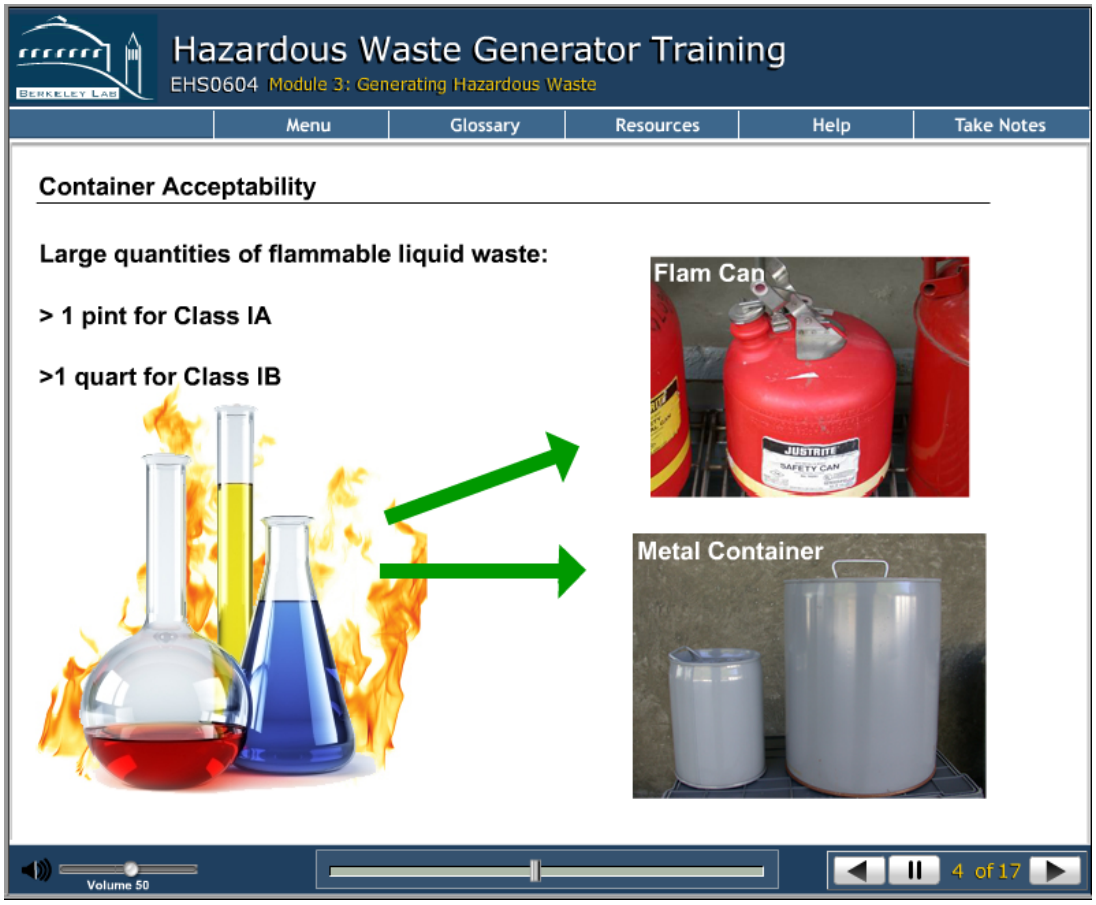
As a waste generator, you must assure that any container you use for waste meets certain minimum requirements. First and foremost, you must assure that the container and its closure are compatible with the waste placed in the container.



For example liquid corrosive wastes should be stored in polyethylene or glass containers that are known to be compatible with acids or bases.

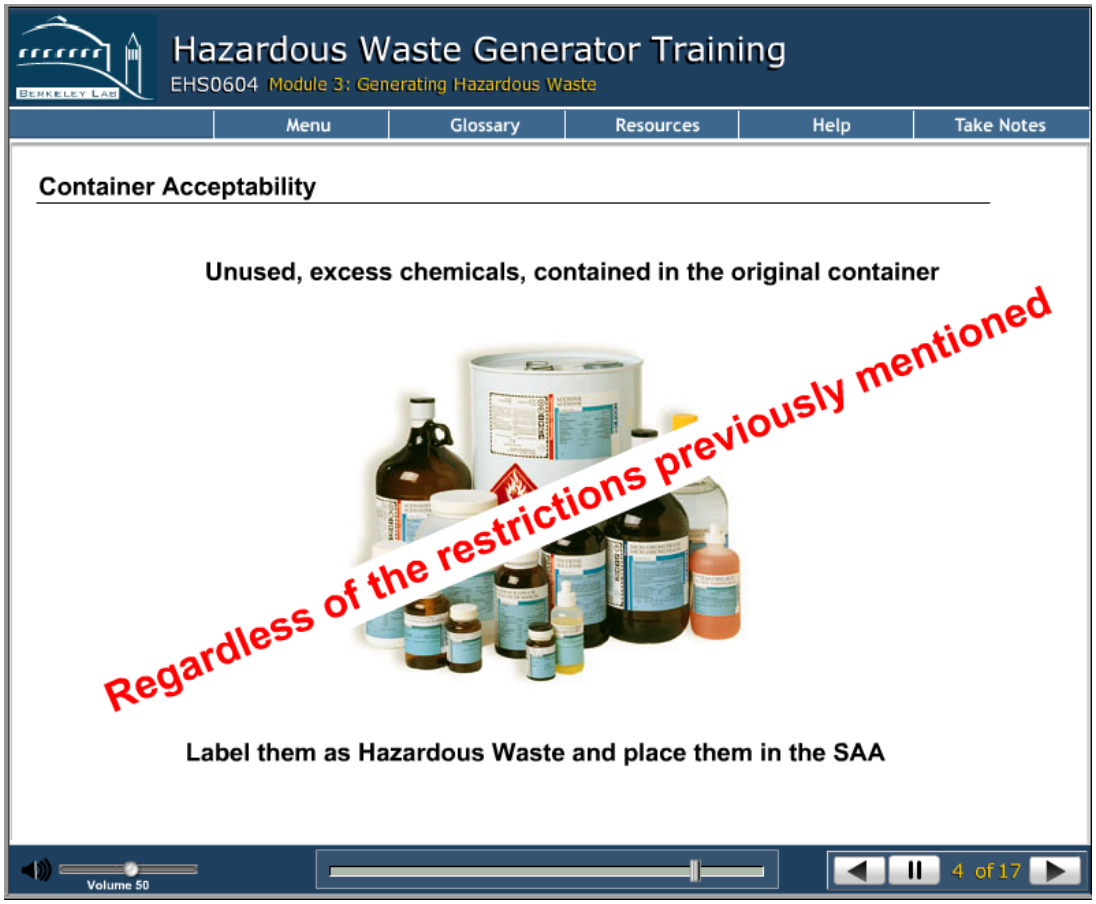


Small quantities of flammable liquid waste may be stored in a glass container but can never be stored in a plastic bottle. Storing flammable liquid waste in a plastic bottle is not necessarily a container compatibility issue, but rather an OSHA and fire code regulation which restricts container type and size for flammable liquid accumulation.

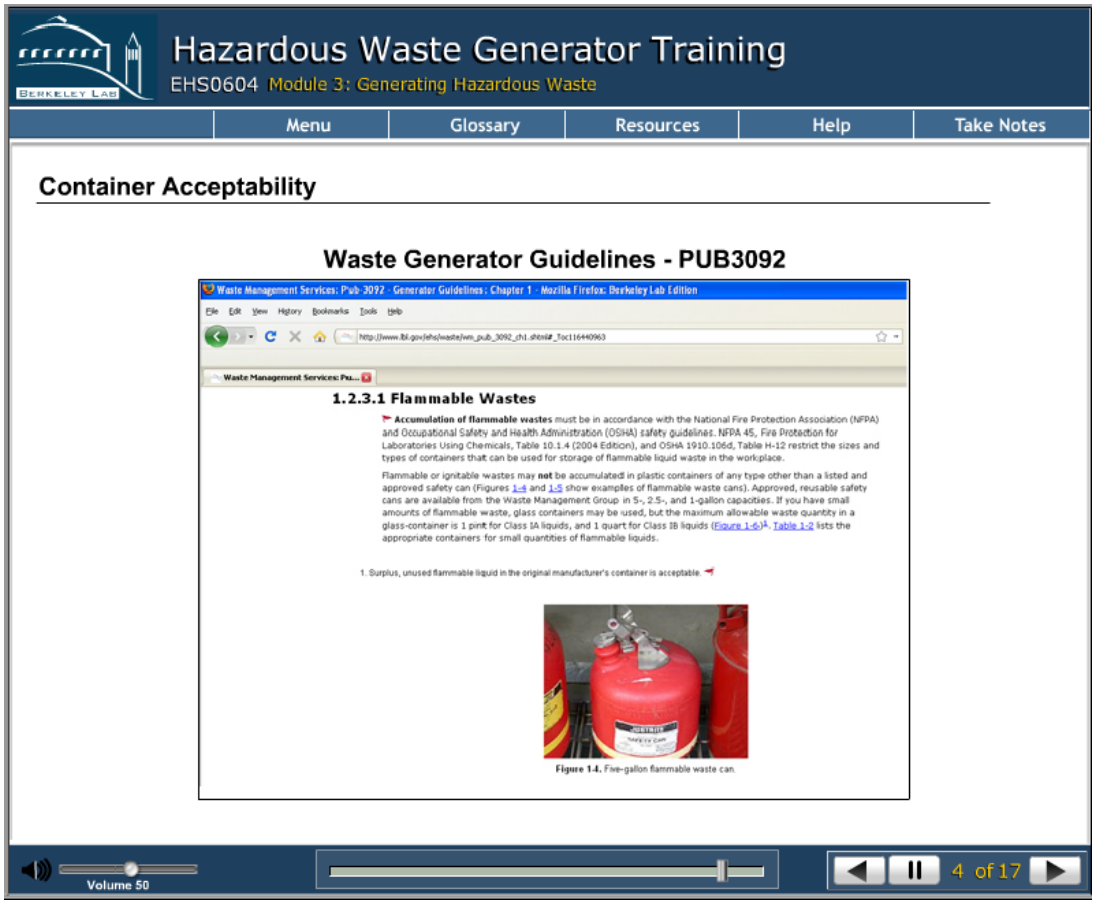


Large quantities of flammable liquid waste that are more than one pint for Class IA or more than one quart for Class IB must be stored in a metal container or approved safety can, sometimes referred to as a flam can. These specially designed cans, may be composed of metal or plastic. For examples of Class 1A and 1B flammable liquid see the generator guidelines and the Chemical Hygiene and Safety Plan.

Approved, reusable safety cans are available from the Waste Management Group in 2.5-gallon, and 1-gallon capacities.



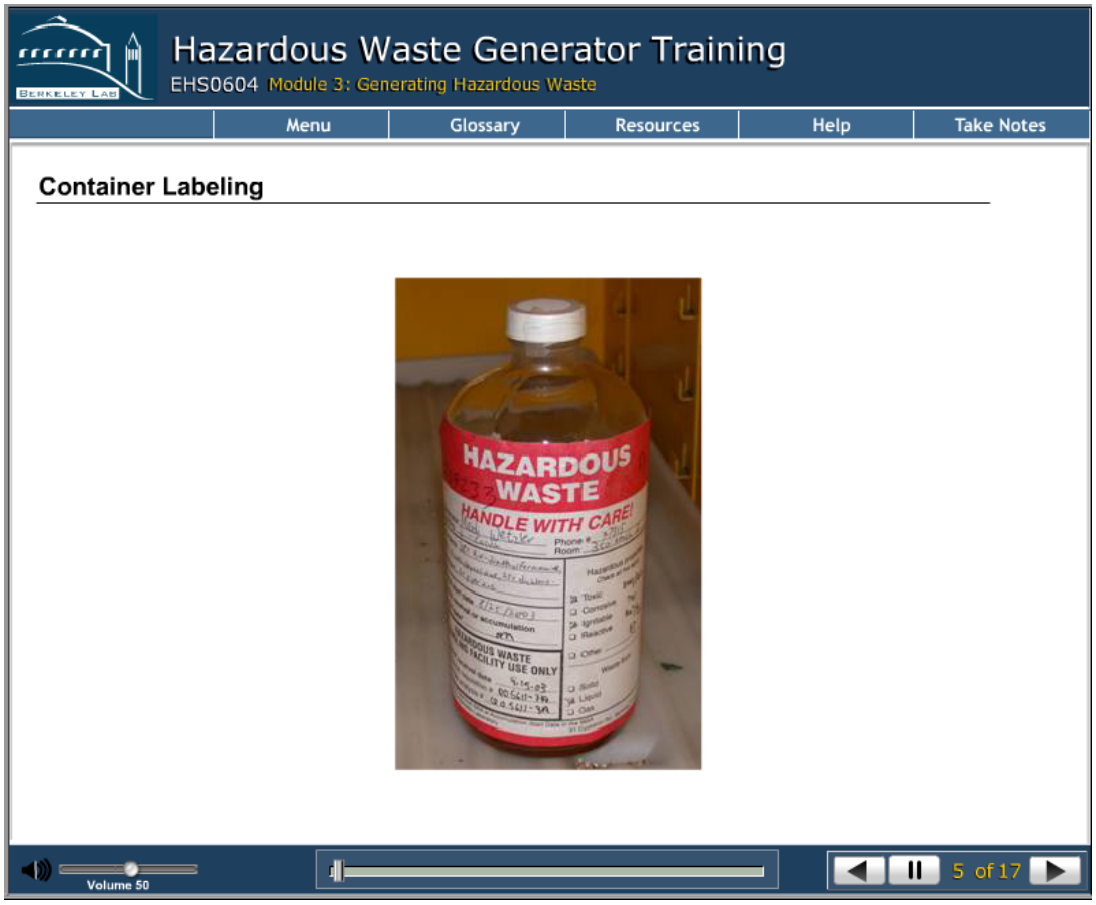
If you have unused excess chemicals that are contained in the original labeled container supplied by the manufacturer you may label them as hazardous waste and place them in the SAA in their original container, regardless of the container restrictions previously mentioned.



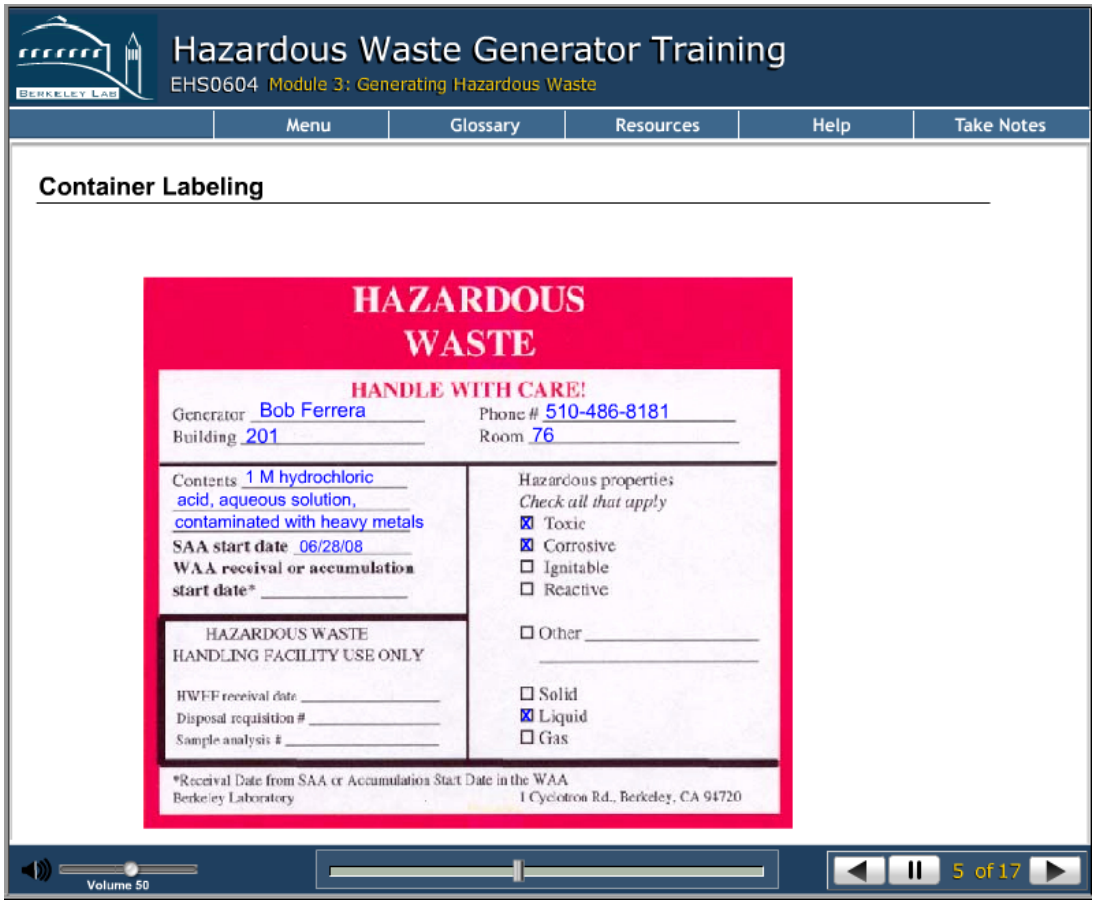
For more information on flammable liquid accumulation visit the flammable wastes section of the Generator Guidelines in PUB-3092.

If you need hazardous waste containers contact your waste generator assistant and they can advise you on where to obtain them.

Containers – Labeling



The waste you generate must be properly marked with a hazardous waste label on the waste accumulation container.



Each label must contain the following information prior to adding waste to an accumulation container:

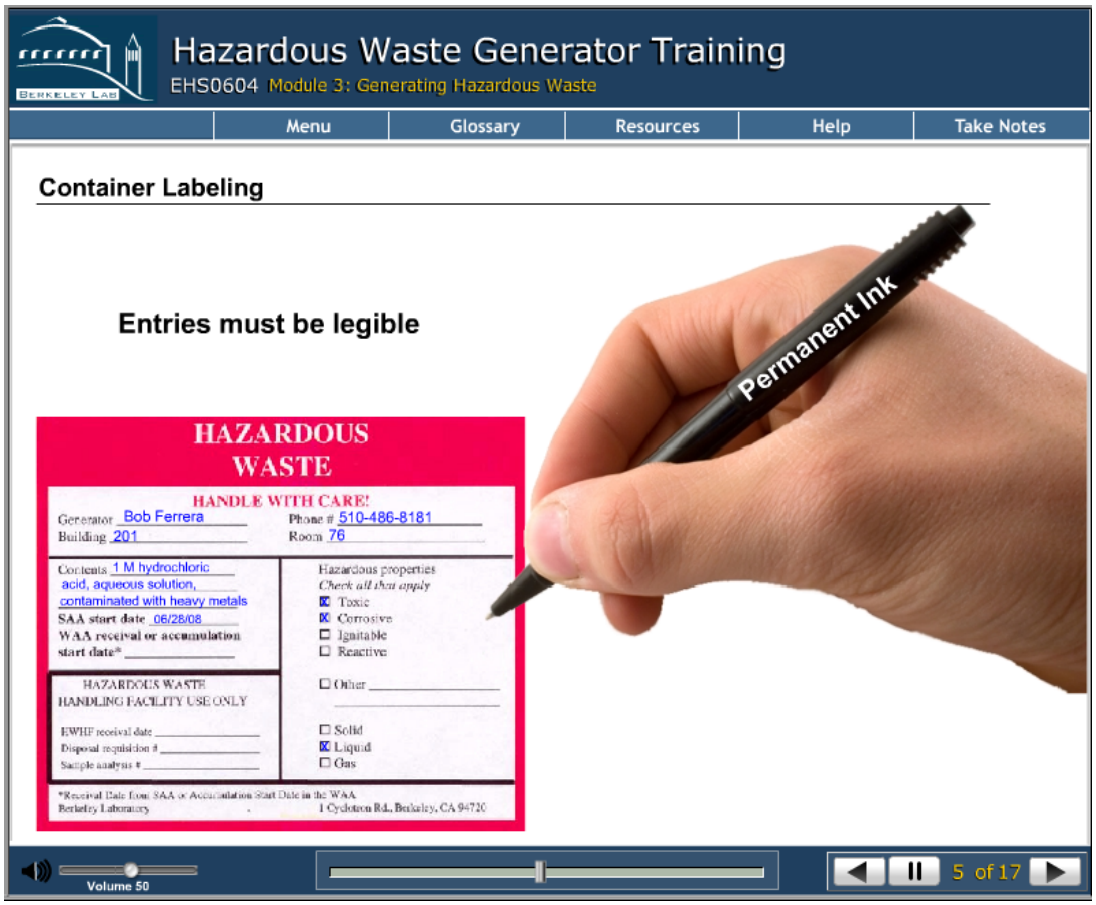
1. Complete generator information, including the generator's name, building number, room number, and phone number

2. A brief description of the waste contents with sufficient detail to convey the primary chemicals which make the waste hazardous. For mixtures of two or more chemicals, this is typically a list of the two or three chemicals which make up the largest percentage of the mixture, accounting for predictable reaction products as appropriate.

3. The "SAA start date", which is the date any amount of waste is first placed in the container. Once established, this date does not change and determines the allowable accumulation area holding time for that specific waste container.

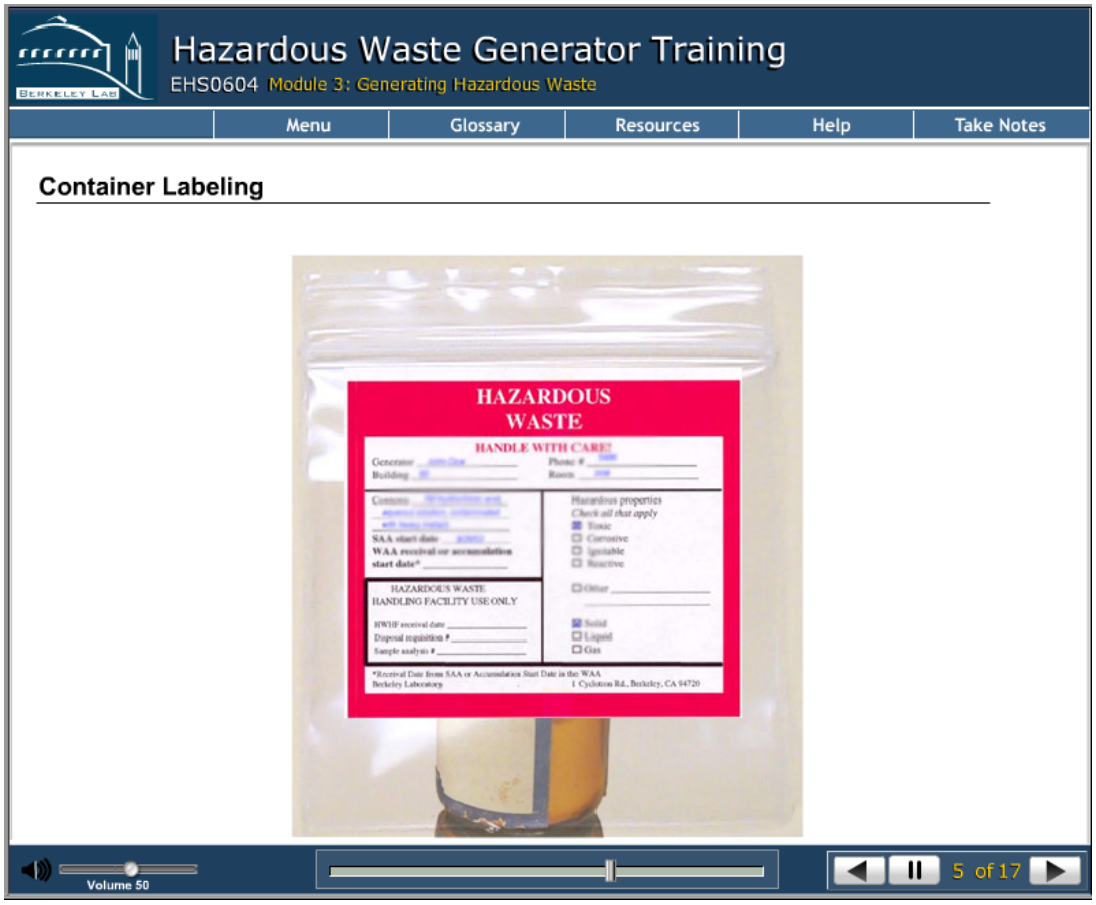
4. Checked boxes that convey the hazardous properties of the waste such as: Toxic, Corrosive, Ignitable, and/or Reactive

5. Checked box which indicates the physical waste form such as: solid, liquid, and/or gas



All entries on the Hazardous Waste Label must be legible. It is recommended that entries be made with a pen containing permanent ink, so that labels don't smear if they get splashed with liquid or fade after prolonged exposure to bright light.

All primary waste containers must have the Hazardous Waste Label affixed to an area of the container that is easily visible for inspection and emergency-response purposes.



A waste container that is too small for a label to be applied without overlapping onto itself can be placed in a ziplock plastic bag, with a Hazardous Waste Label affixed to the bag. In this case, be sure there is a matching description of the waste on the container itself.

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Container Labeling

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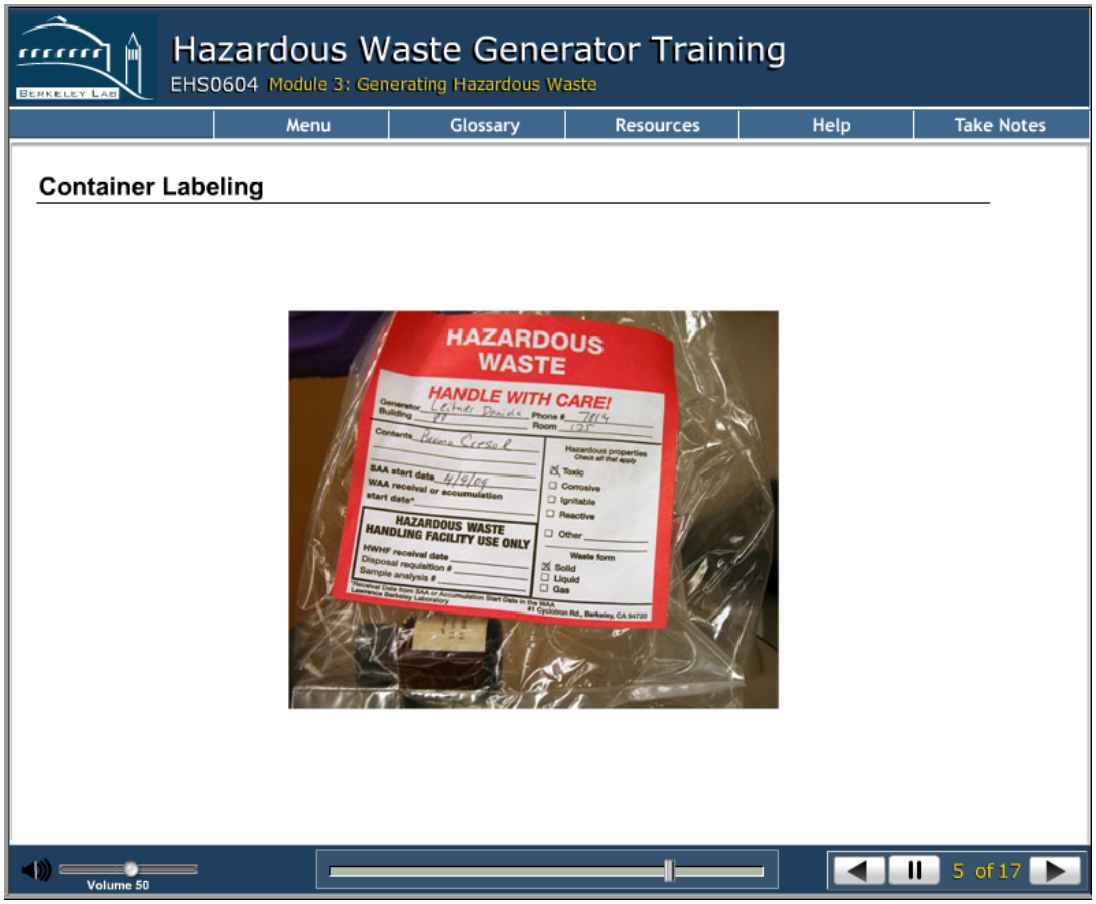
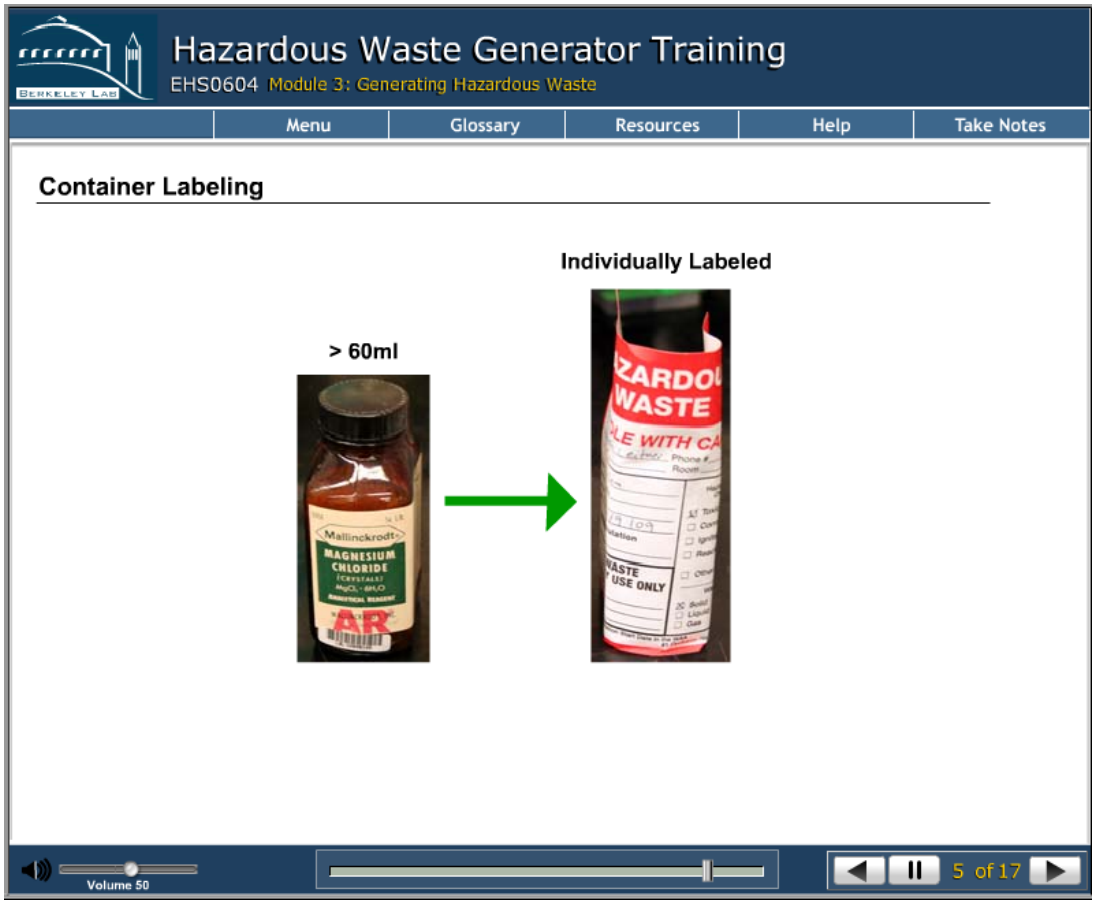


When managing surplus, unused chemicals in their original container, do not cover or destroy the original manufacturer's label. If the container size requires you to cover the original label, put the container in a plastic bag and label the bag.

Do not place any waste in a container which is not completely and accurately labeled.

If you need hazardous waste labels contact your waste generator assistant.



Each waste container that is greater than or equal to 60 ml in capacity must be individually labeled and managed, regardless of whether there are multiple containers with chemically identical contents.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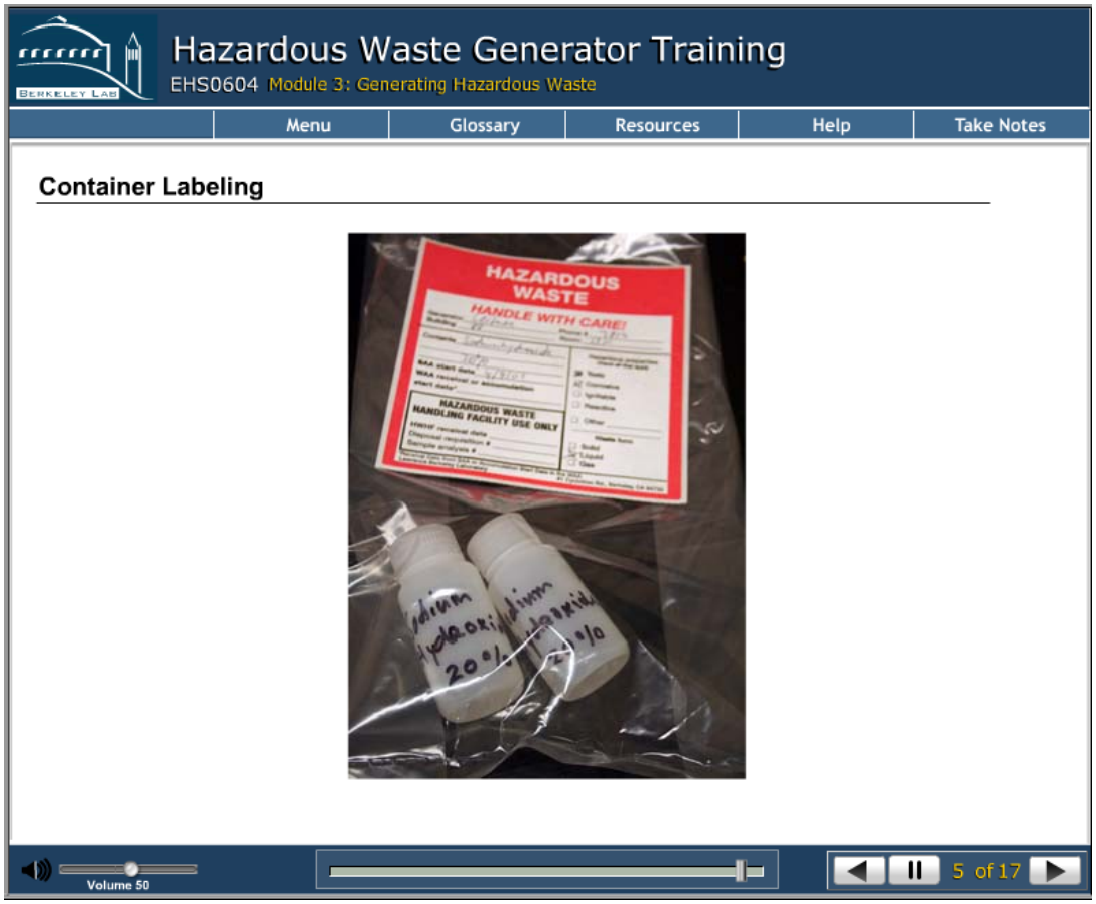
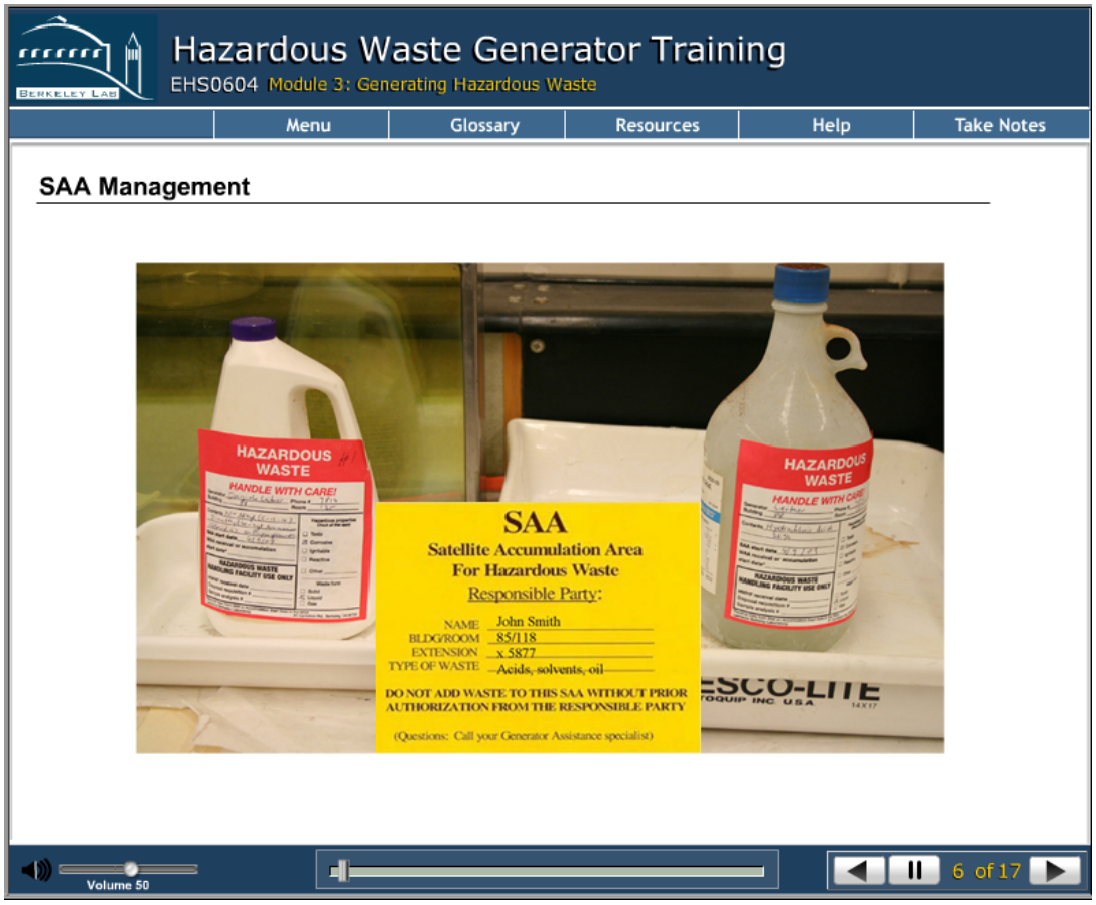
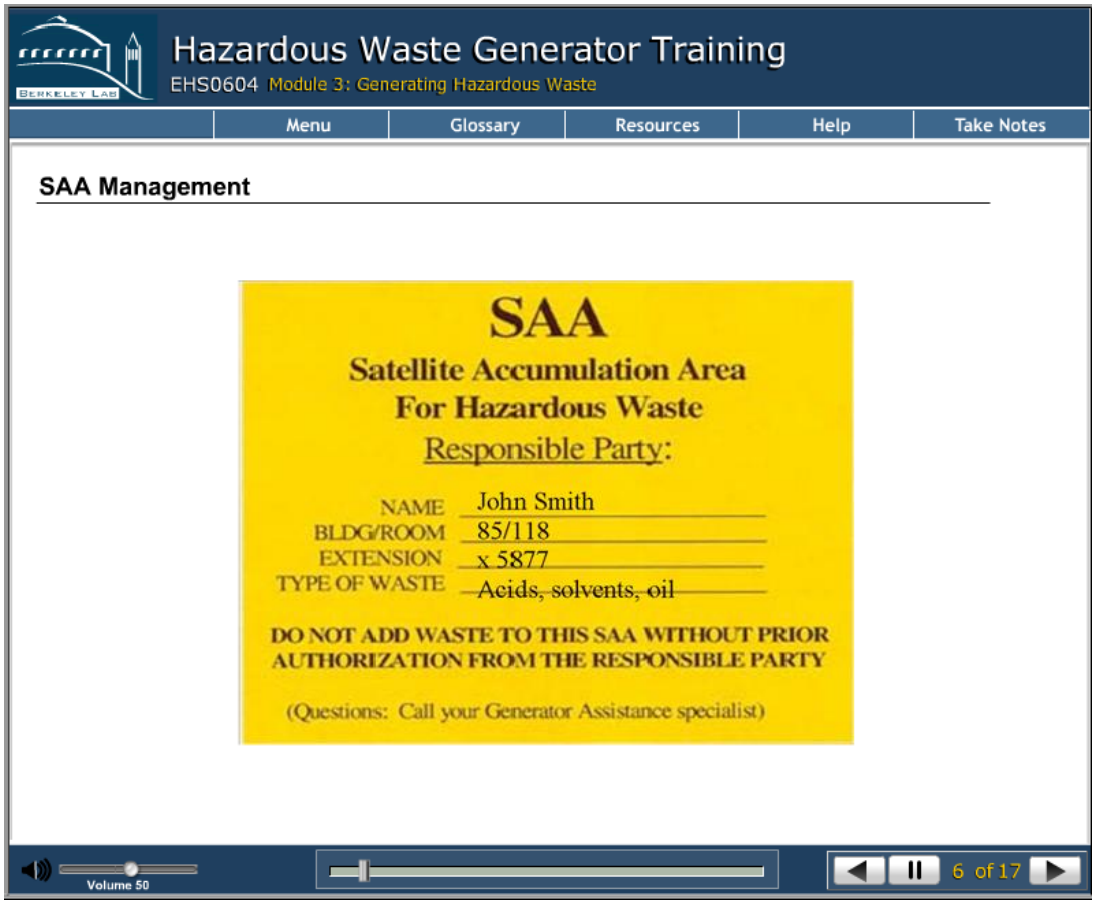


If you have containers less than 60 ml in capacity with chemically identical contents, these smaller containers can be packaged together in a bag or box and labeled with a single hazardous waste label. In this case, you will call this bag or box a single container.

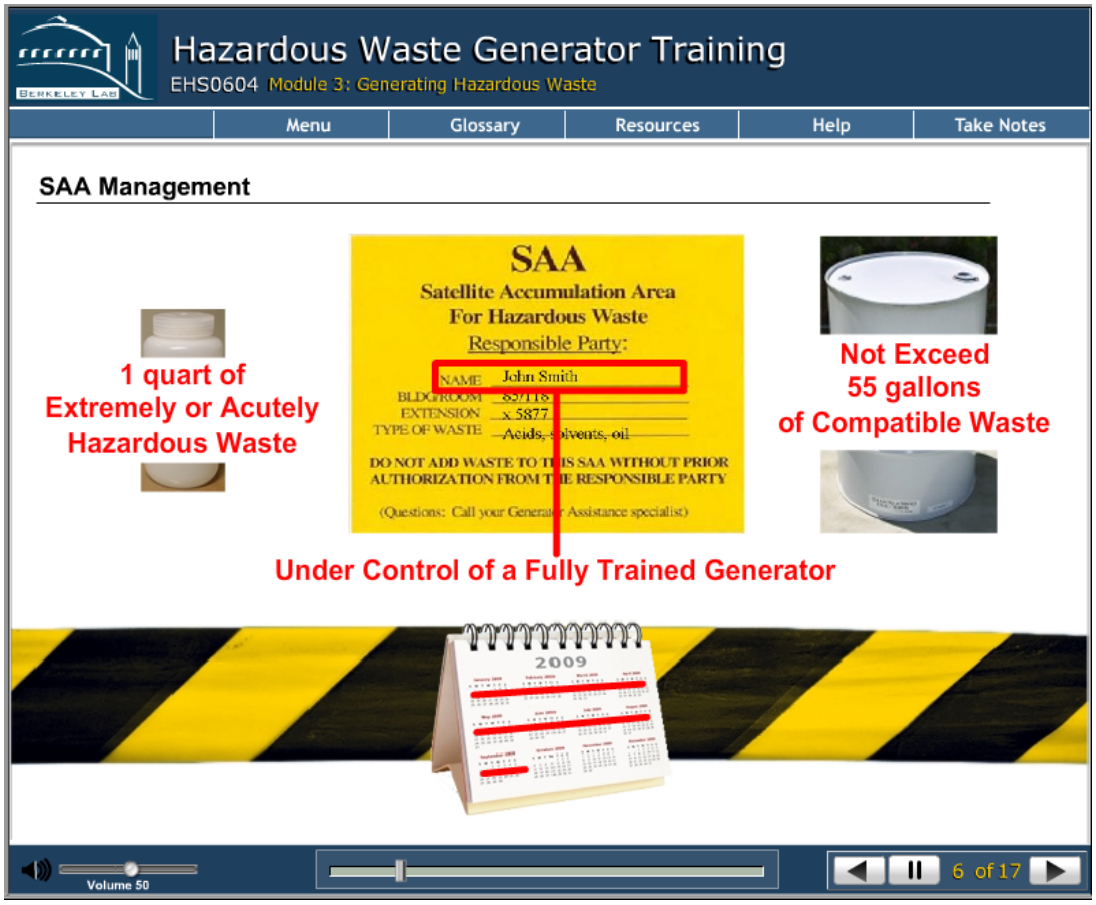
SAA Management



Laboratory hazardous waste accumulation points are called Satellite Accumulation Areas, also known as SAAs.



An SAA is a designated area in the room where waste is generated and is clearly marked with a yellow SAA sign.

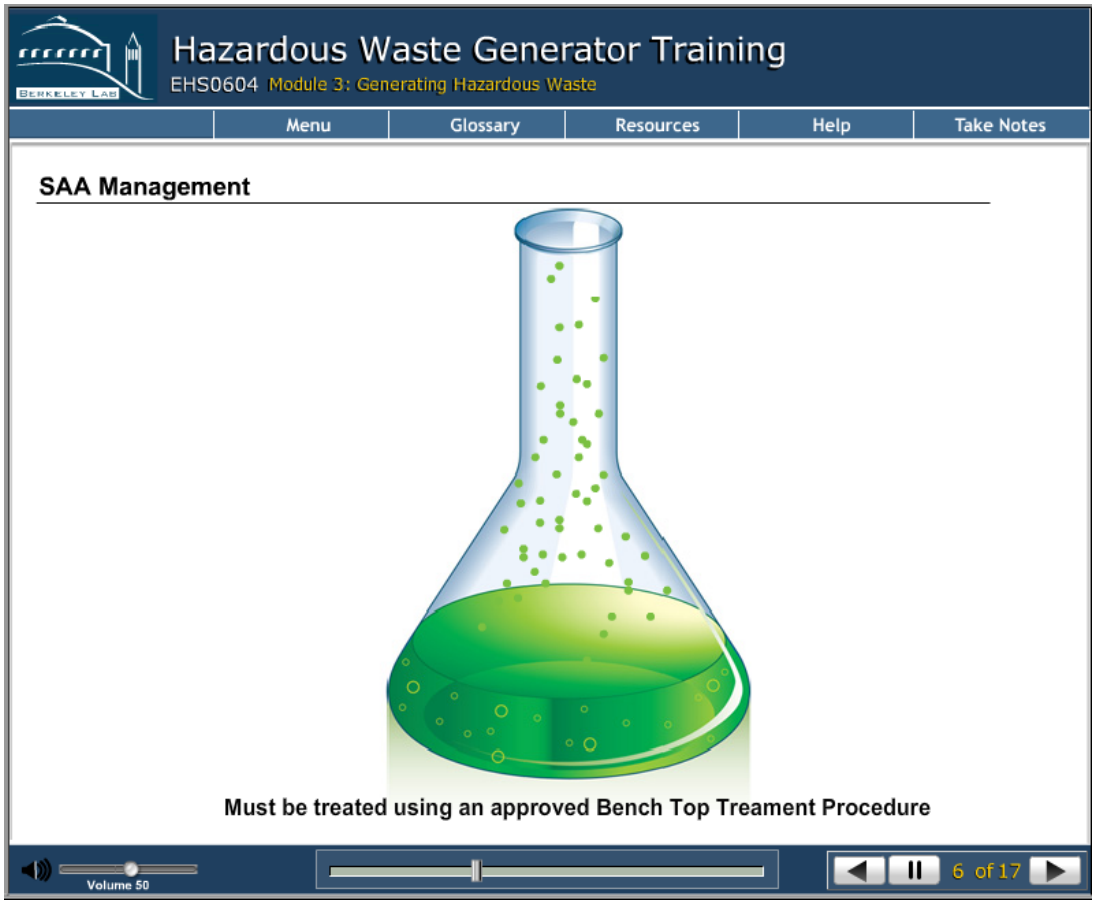


SAA boundaries are often clearly delineated with tape and arrows. The SAA must be under the control of a fully trained generator, must not exceed 55 gallons of each compatible waste stream or 1 quart of extremely or acutely hazardous waste. The waste stored in the SAA must not sit more than 9 months before it is picked up.

Containers that are stored in an SAA must be kept closed at all times except when adding waste.

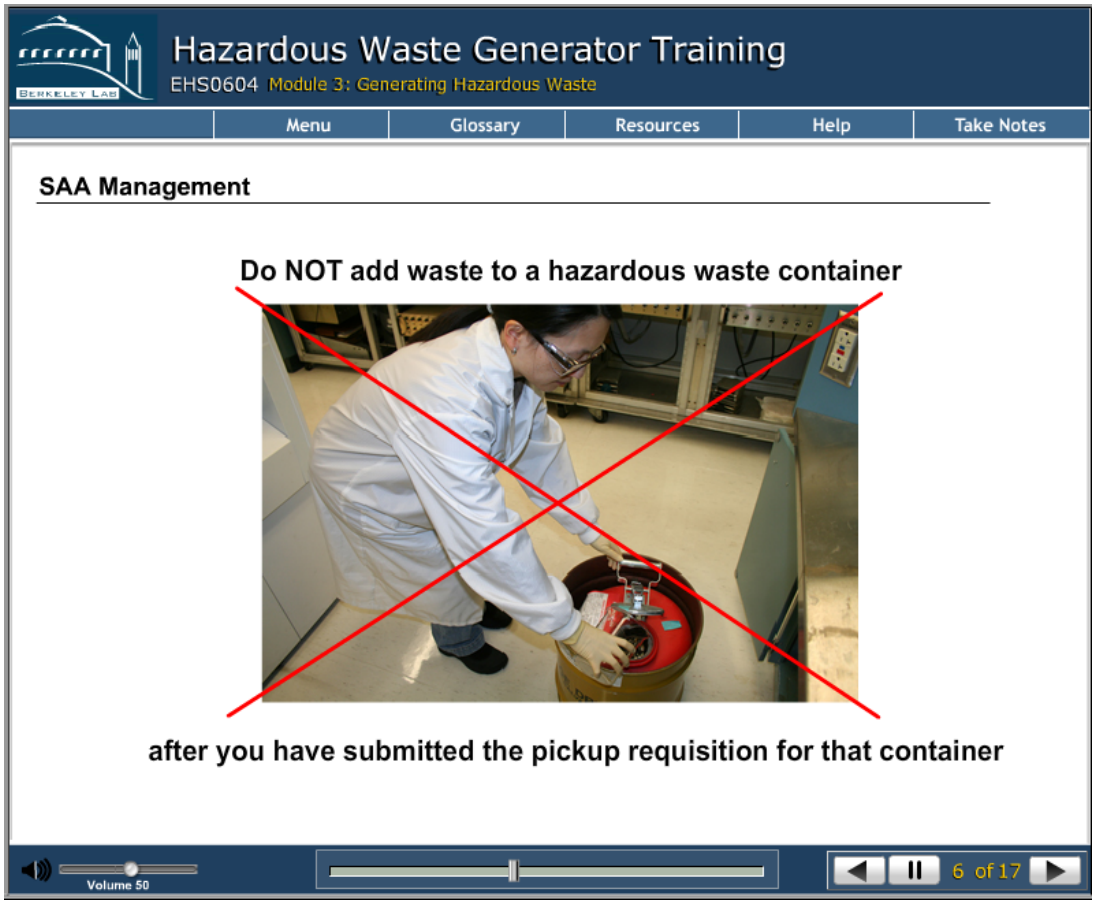
Never leave a waste container unattended when it is open, not even for a few minutes. A funnel in a container opening is not considered closed unless the funnel itself seals to the container and has a cover which also seals, preventing spillage.

Container closures must be secure. Cork, rubber, or ground-glass stoppers; aluminum foil; and polyethylene film or parafilm are not allowed for use as a container closure.

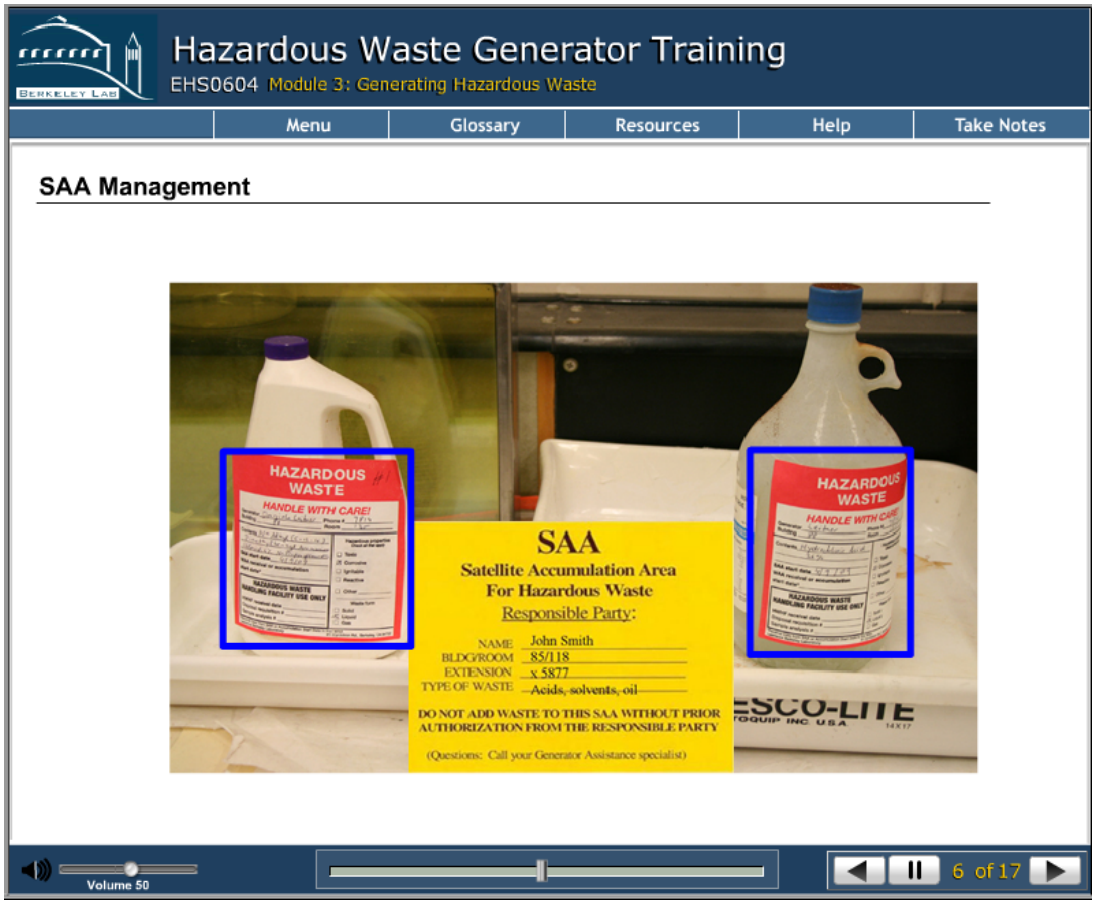


If the waste is likely to generate gases during storage, it must be treated using an approved benchtop treatment procedure before adding the material to the appropriate container.

Consult with your Generator Assistant if you have a waste which is still reacting and building up pressure inside the container. Plastic bags used as containers must be closed with twist-tie, ziplock, or tape.

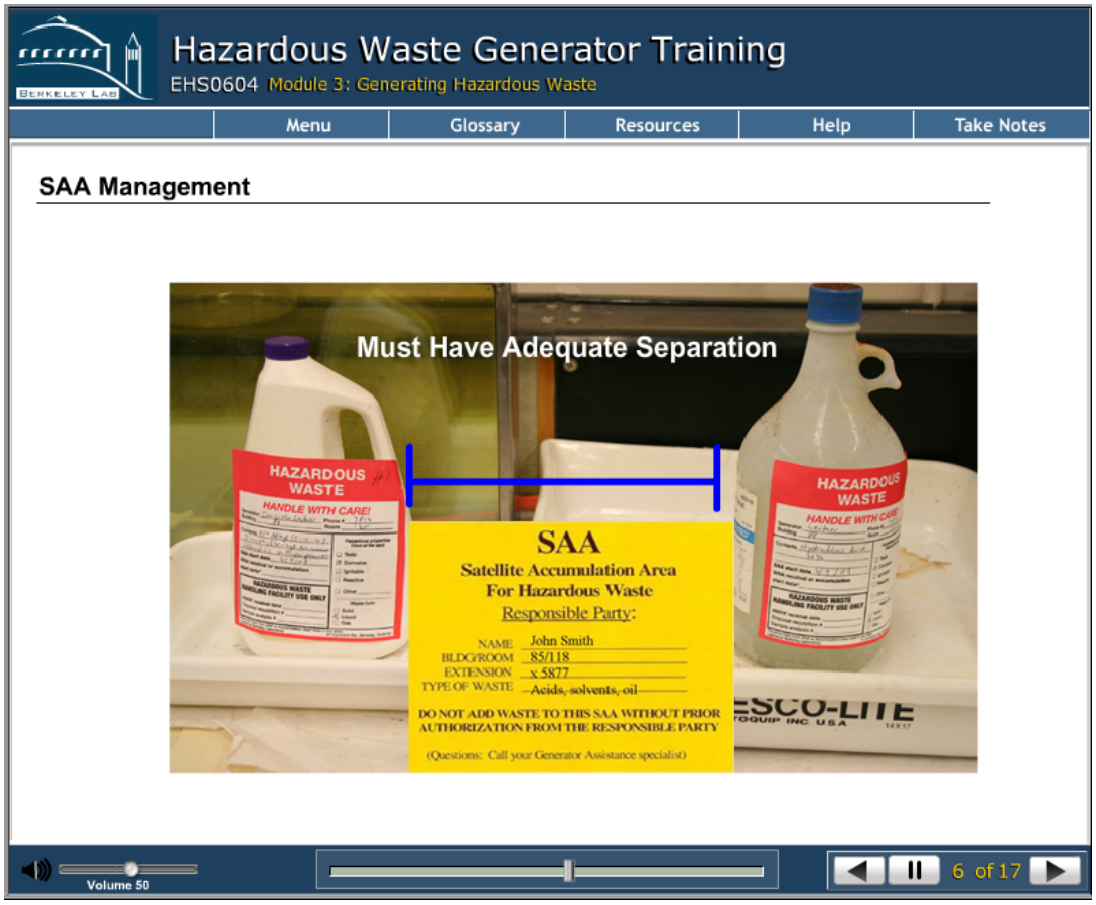


Do not add waste to a hazardous waste container after you have submitted the pickup requisition for that container.

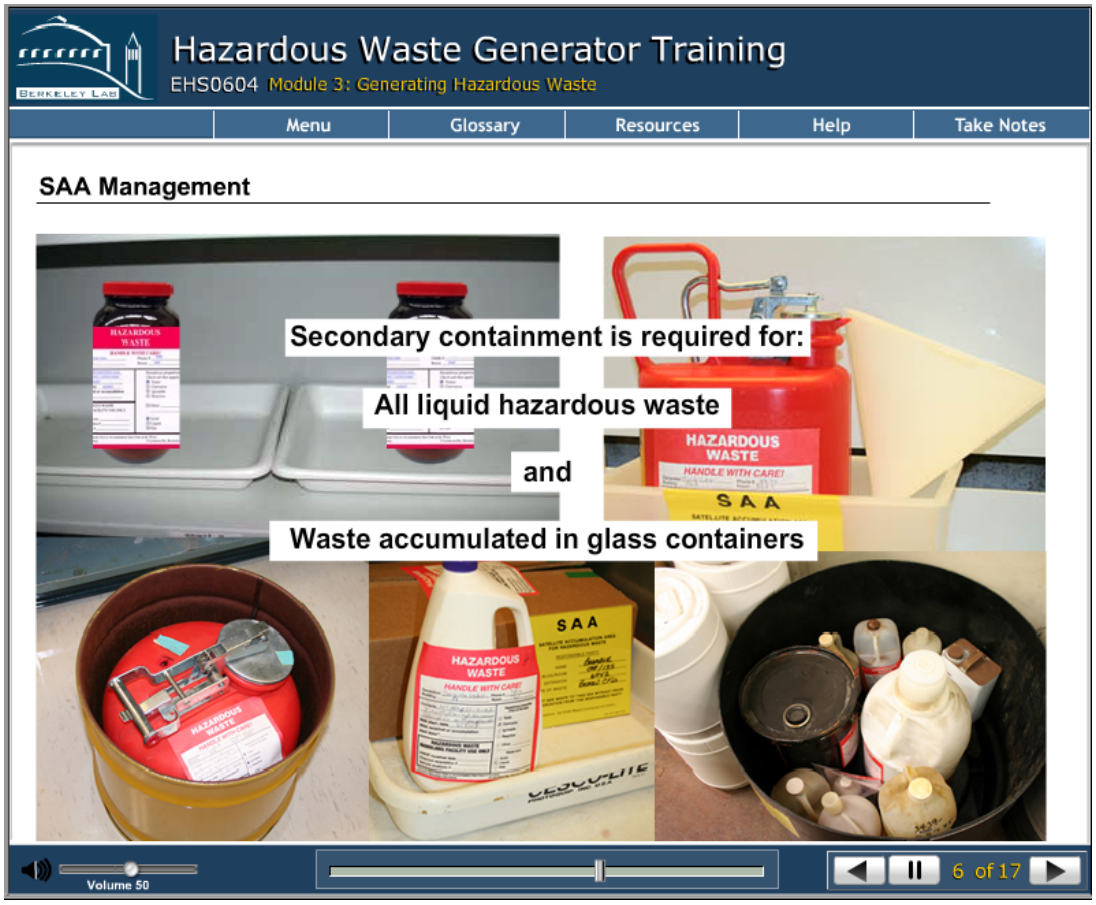


This has been mentioned previously in this course, but it's worth mentioning again. All waste containers must have a red-and-white hazardous waste label attached to it. Labels must be complete and correct at all times.

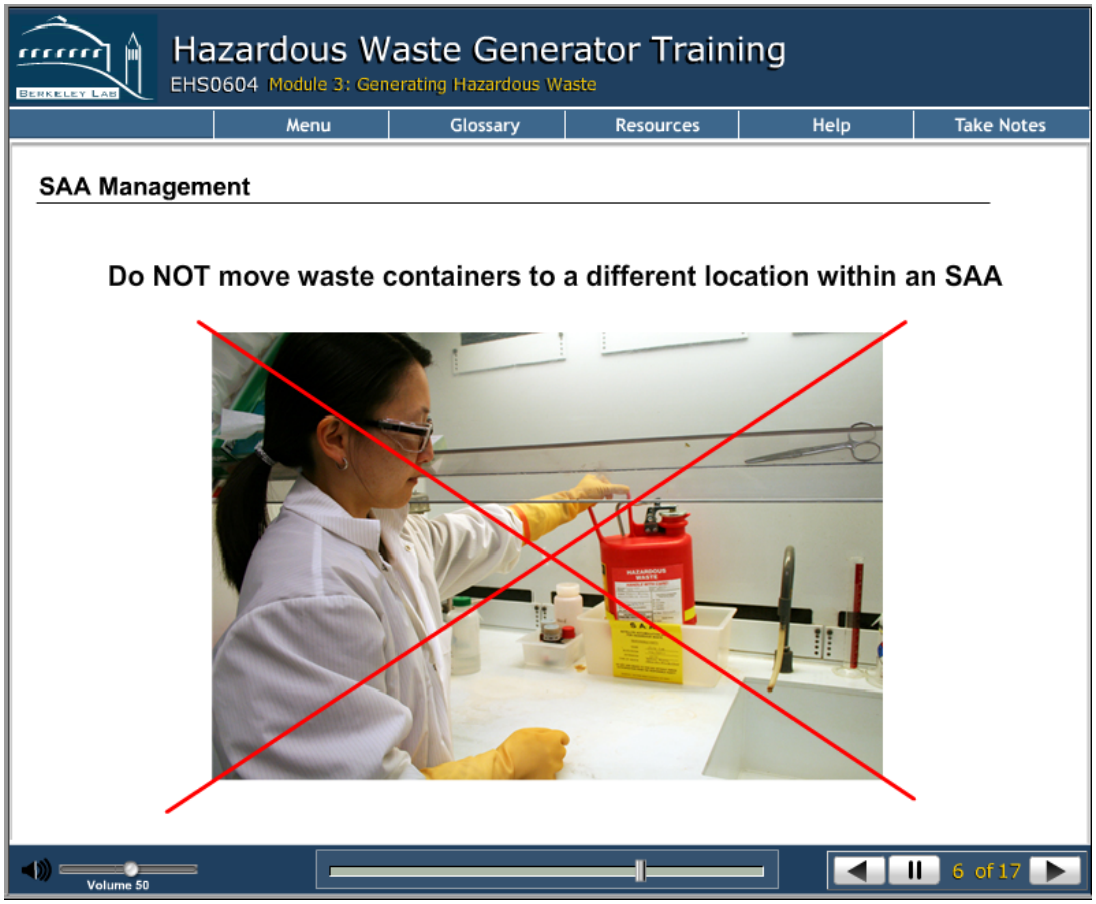
You should never store anything in the SAA that may be mistaken as an unlabeled hazardous waste item.



If wastes are incompatible, the waste containers in SAAs must have adequate separation. One way to do this is to provide physical distance between wastes that may react with each other if inadvertently mixed.



Using multiple secondary containers is another way to separate waste and is required for all liquid hazardous wastes and all wastes accumulated in glass containers. Secondary containers must be compatible with the chemicals they may need to contain and 10% larger than the largest primary container stored in the secondary container. Make sure to sort waste that may react with one another into different secondary containers.



Do not move waste containers to a different location within an SAA. By doing you could create compatibility issue with other chemicals. If you are generating incompatible hazardous wastes you will want to establish separate SAAs or establish physical barriers to prevent inadvertent mixing. Contact your Waste Generator Assistant for direction on how to do this.

When accumulating waste you must segregate chemicals that could potentially react with each other if mixed together. To segregate chemicals you need to have separate containers for each compatible waste stream.

For example collect acids with acids and bases with bases. Never add organic solvents to oxidizer waste.

Prior to leaving Berkeley Lab or moving to another space it is your responsibility to:

- Check the SAA in your work area for waste that is yours
- Fill out a requisition for the waste you generated, and
- Submit the requisition at least two weeks prior to your departure

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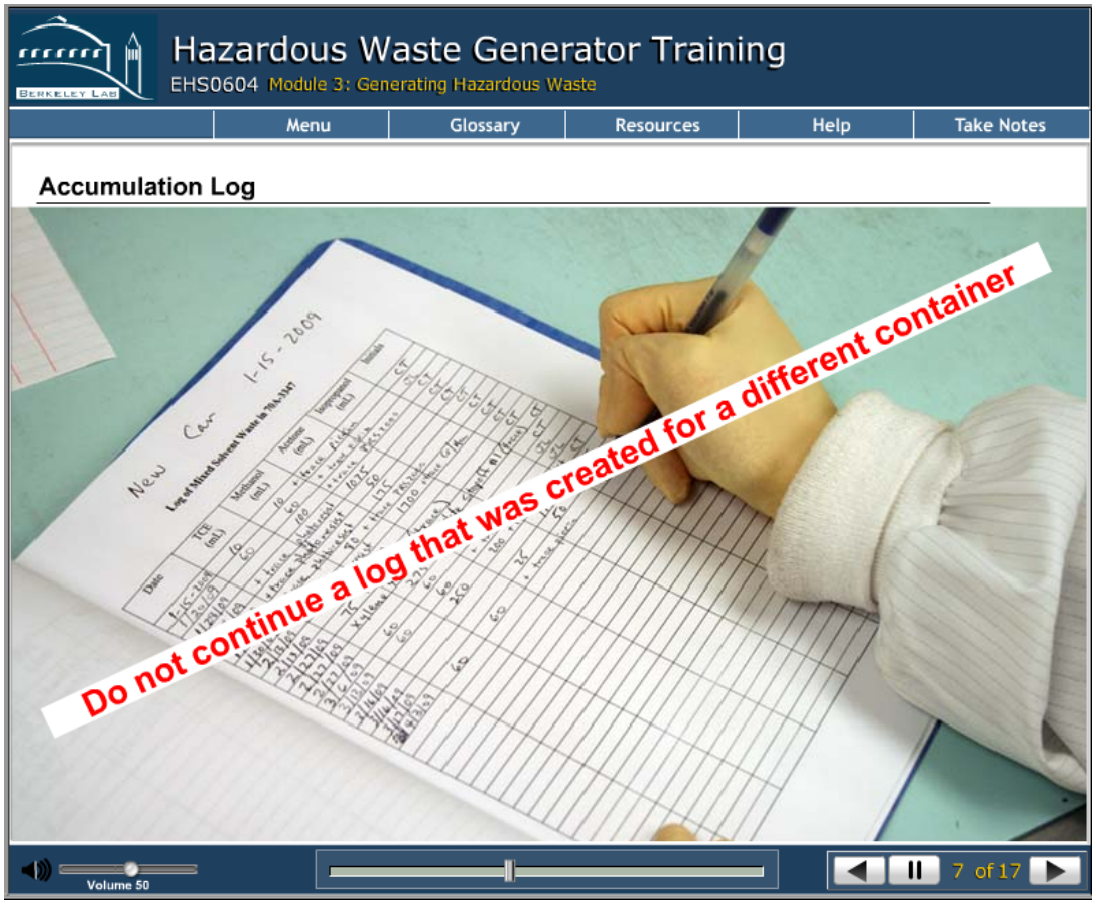
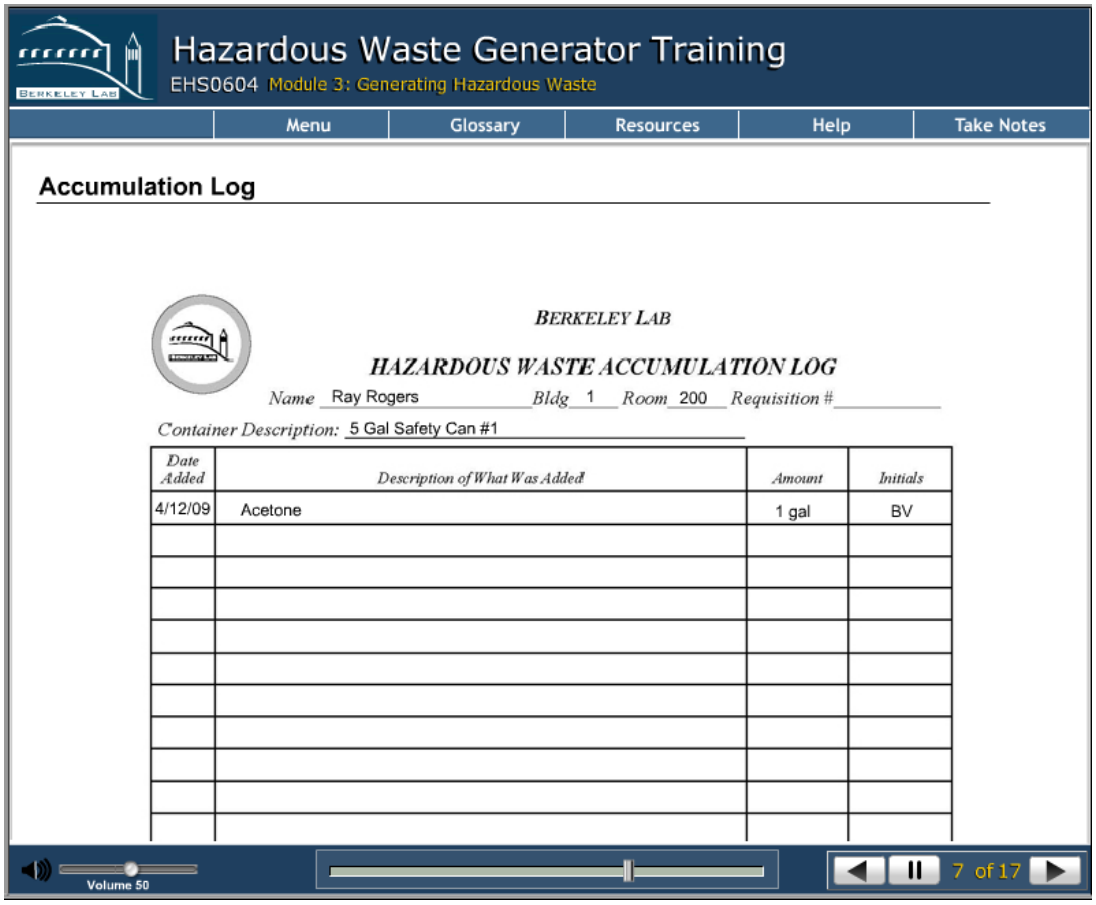
Accumulation Log

When compatible waste of varying composition is added to a single container over an extended time period, it is necessary to list the chemicals which are added to the container in order to derive a final summary waste description when the container is full or no longer needed. This is accomplished by the use of a Waste Accumulation Log.

This log should be properly documented to ensure it can be linked to the appropriate waste container. When starting a new waste container, please be sure to start a new log.



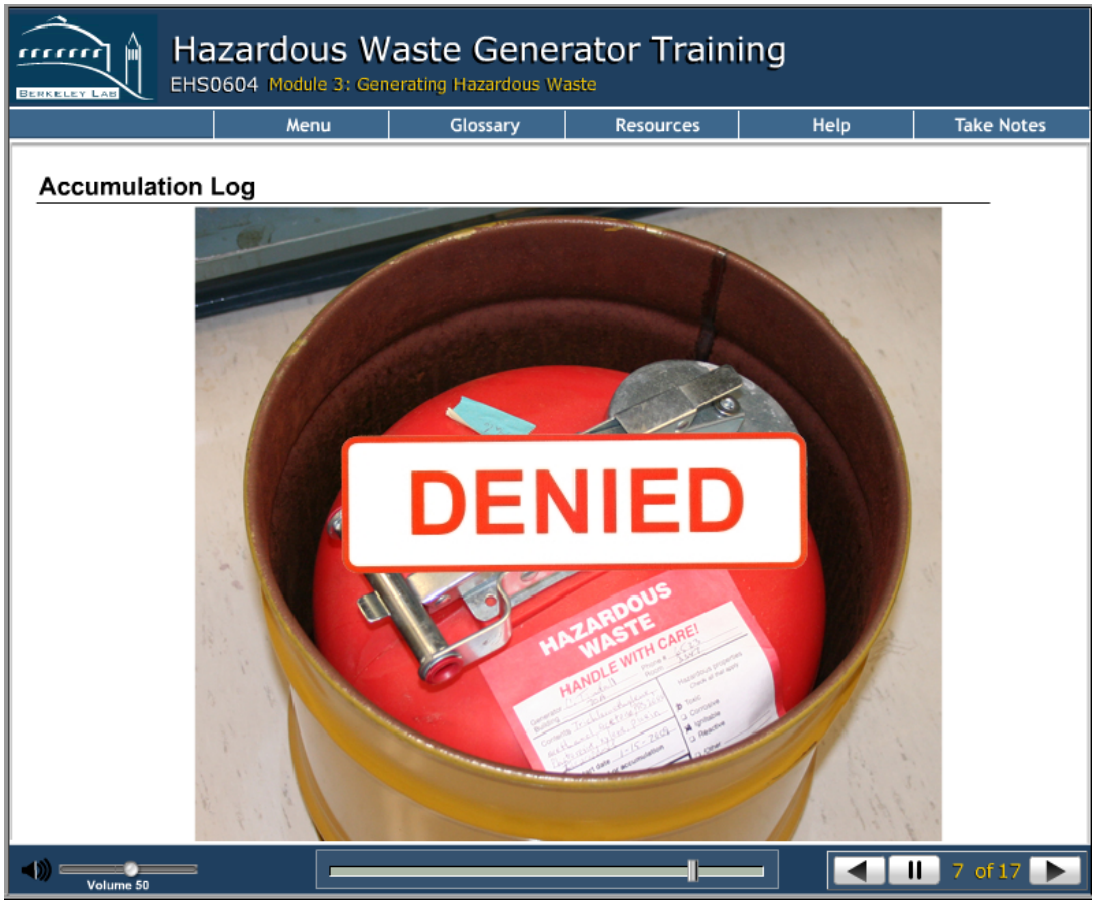
Do not merely continue a log that was created for a different container as this creates confusion not only for other generators but also for the Waste Management staff who will be reviewing the log during their certification process.



Each time an addition is made to a waste container you must record:

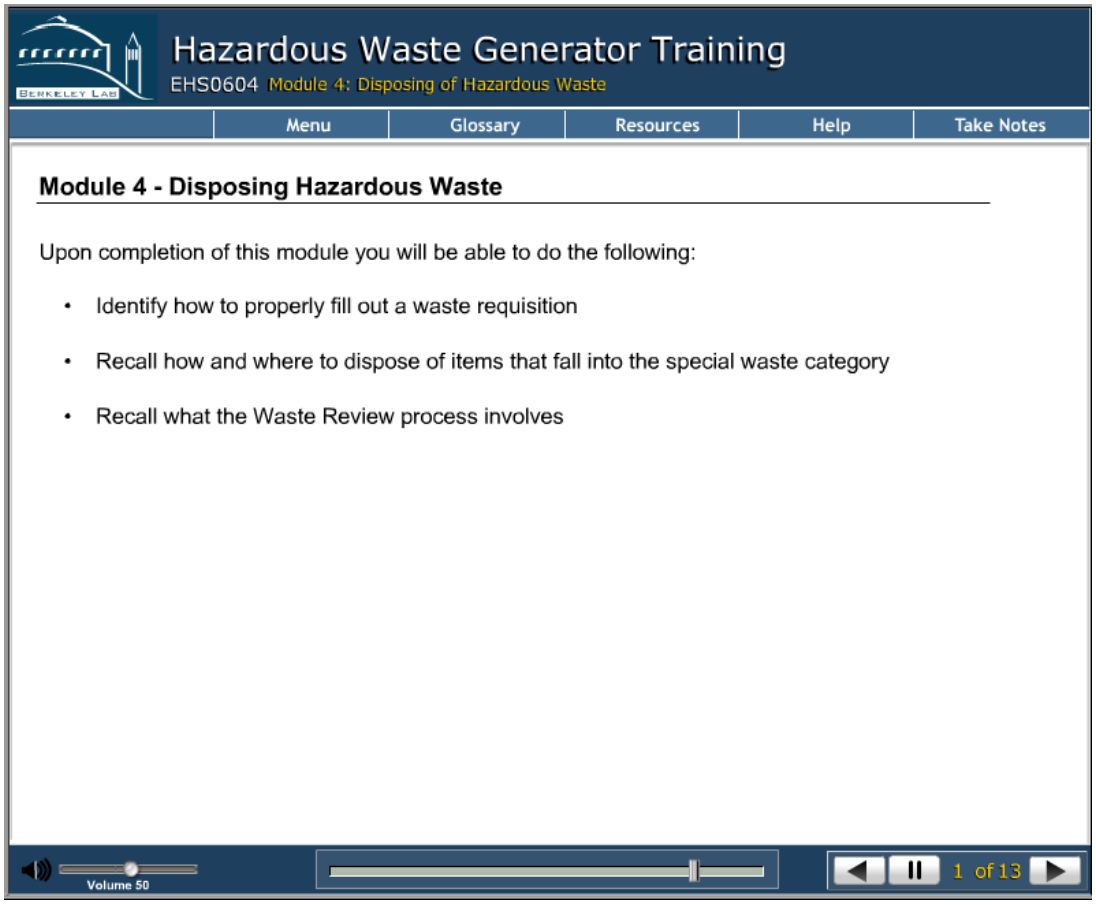
- The date the waste was added,
- A chemical/physical description of the waste added,
- Amount added, and
- Your initials or signature

This information will be necessary for the person responsible for filling out the requisition to develop a final list of constituents and concentrations.



The Berkeley Lab Waste Management Group will not accept waste into the Hazardous Waste Handling Facility if the generator cannot account for 100% of the contents of the waste container. Regular use of this log will facilitate identification of the final waste composition.

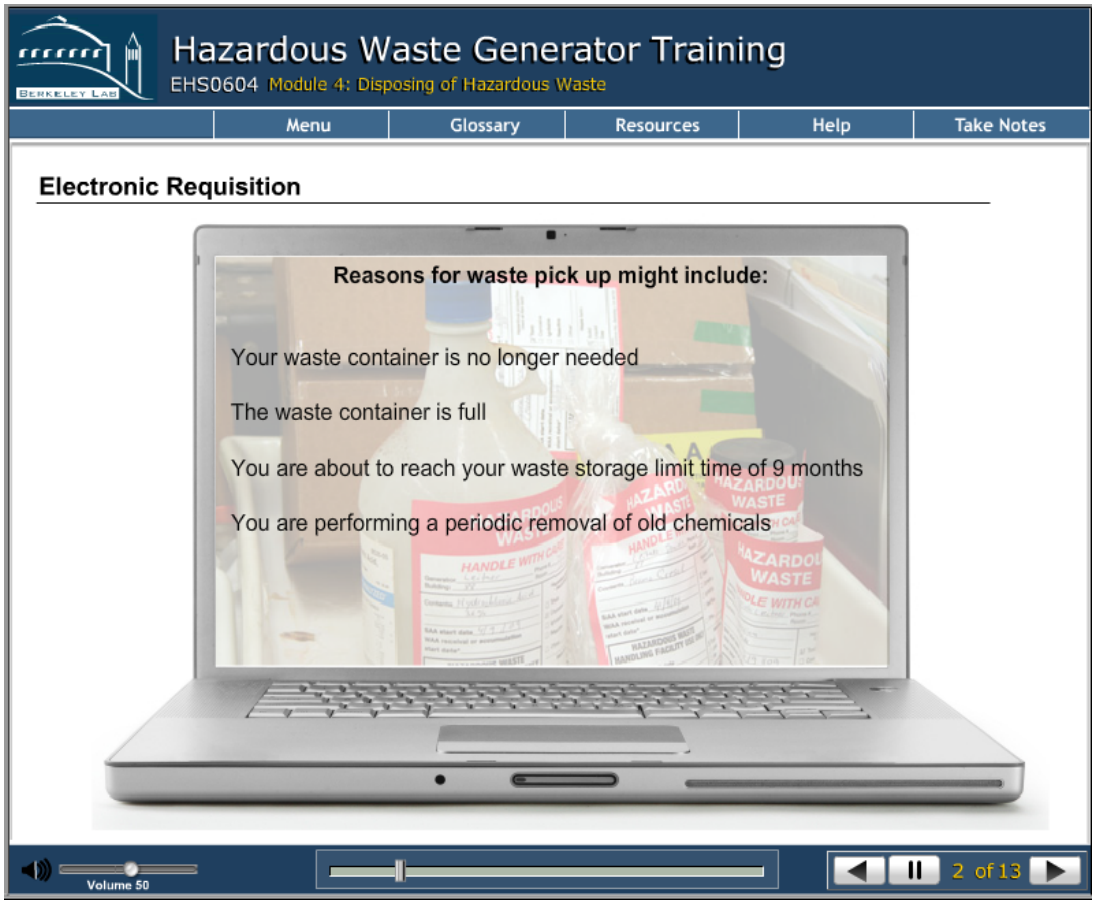
Module 4 – Disposing of Hazardous Waste



Upon completion of this module you will be able to do the following:

- Identify how to properly fill out a waste requisition
- Recall how and where to dispose of items that fall into the special waste category
- Recall what the Waste Review Process involves

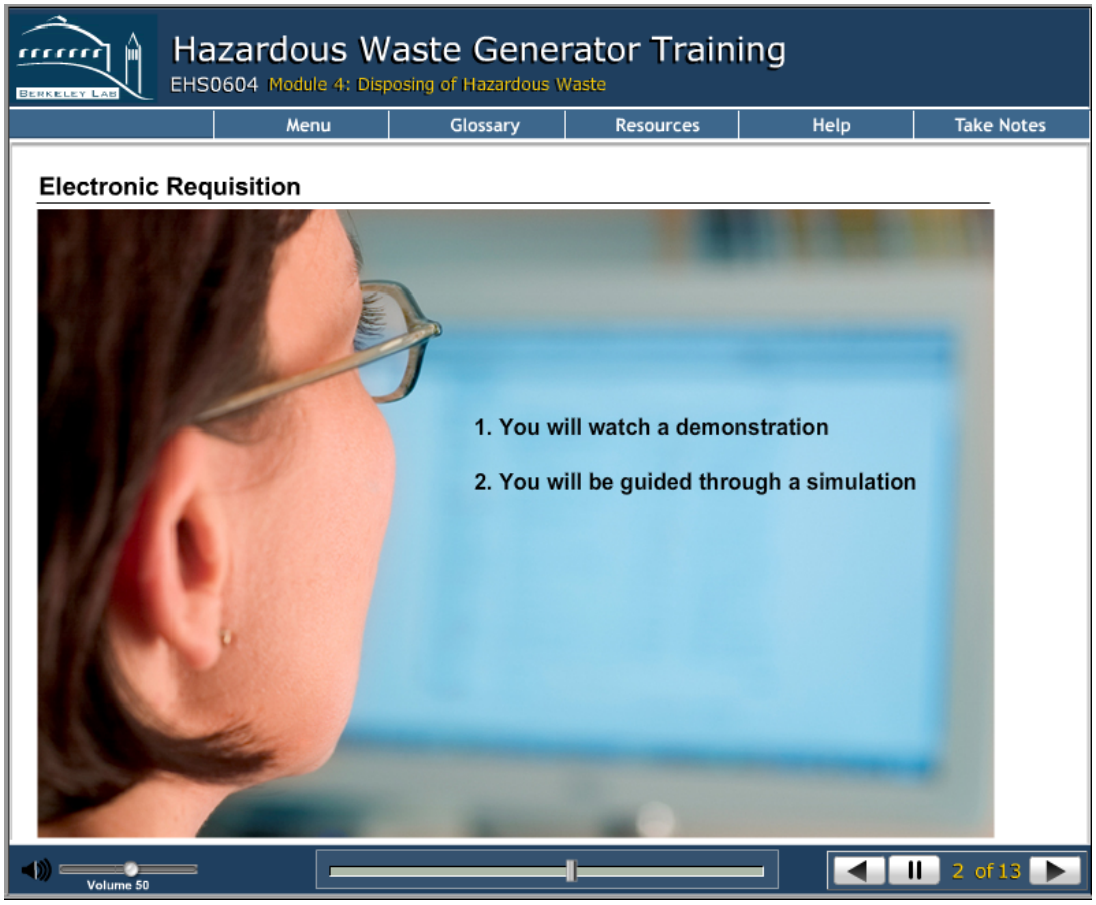
Electronic Requisition



When you would like your waste to be picked up, you must fill out an electronic Hazardous Waste Disposal Requisition. Reasons for waste pick up might include your waste container is no longer needed, the waste container is full, you are about to reach your waste storage limit time of 9 months, or you are performing a periodic removal of old chemicals to maintain a safe work environment.

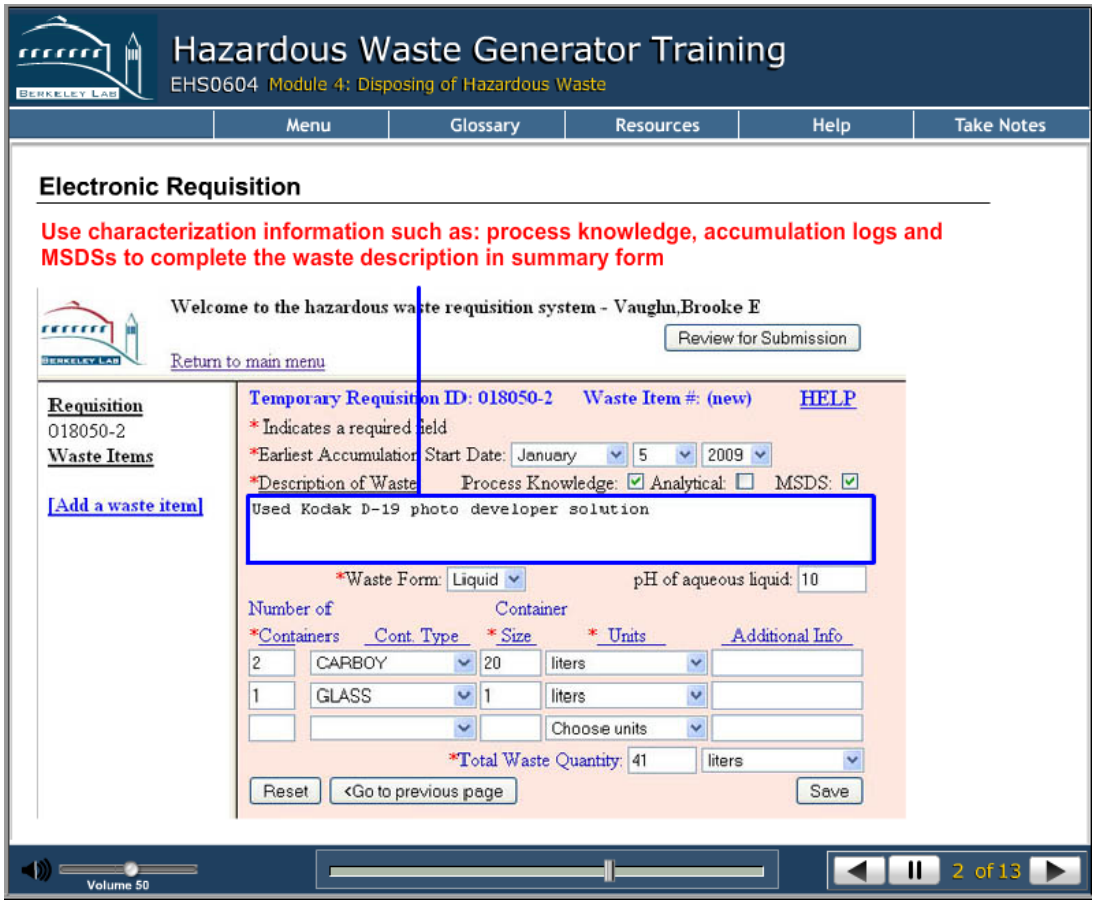
Once you have submitted a completed requisition, your Waste Generator Assistant will review it for accuracy and proper completion. You may be contacted to answer questions or make corrections to the requisition. Your requisition must be correct without any missing information before your waste can be picked up.

Anyone who generates hazardous waste and has completed this training can fill out a requisition. Sometimes a requisition is filled out by the SAA Responsible Person, the person generating waste or a designated person. Whatever the case may be, it's important that the requisition is filled out correctly.

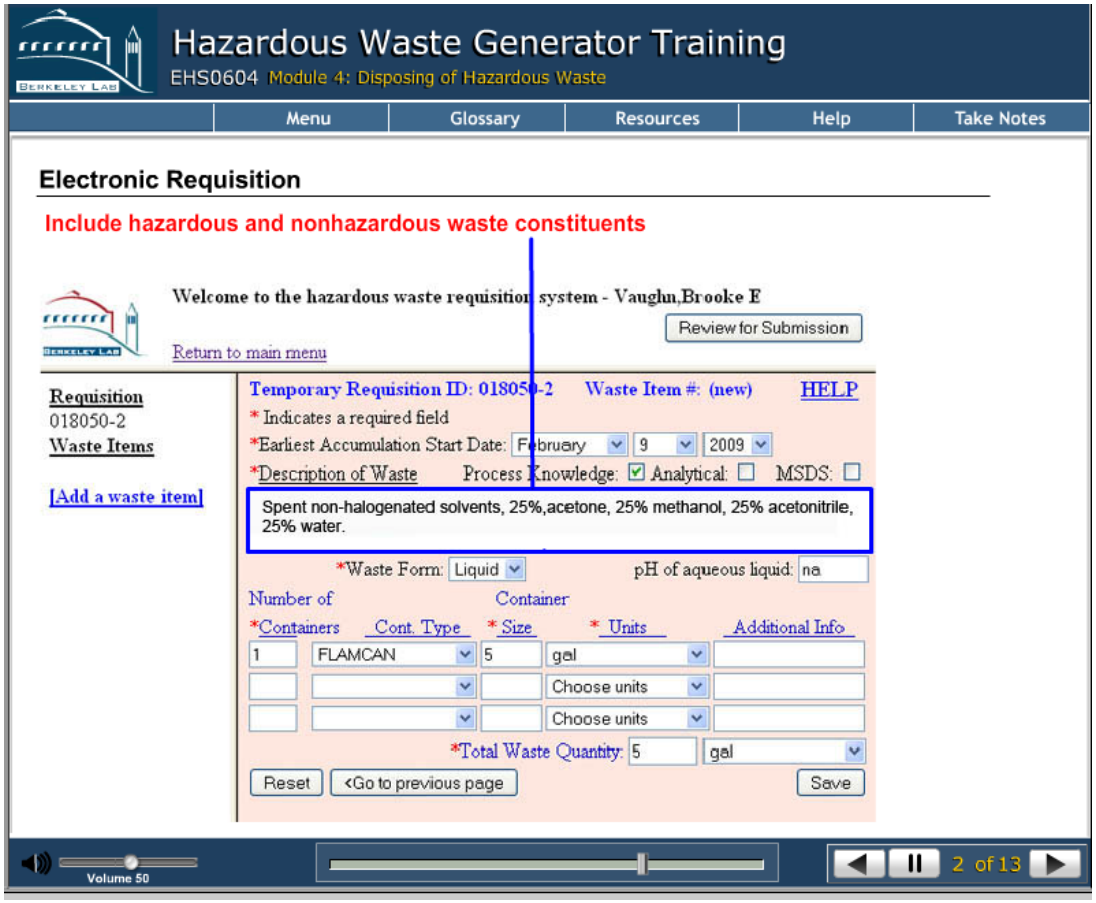


To help you do this, you will now watch a demonstration on how to properly fill out a requisition. After the demonstration you will be guided through the process for filling out your own requisition.

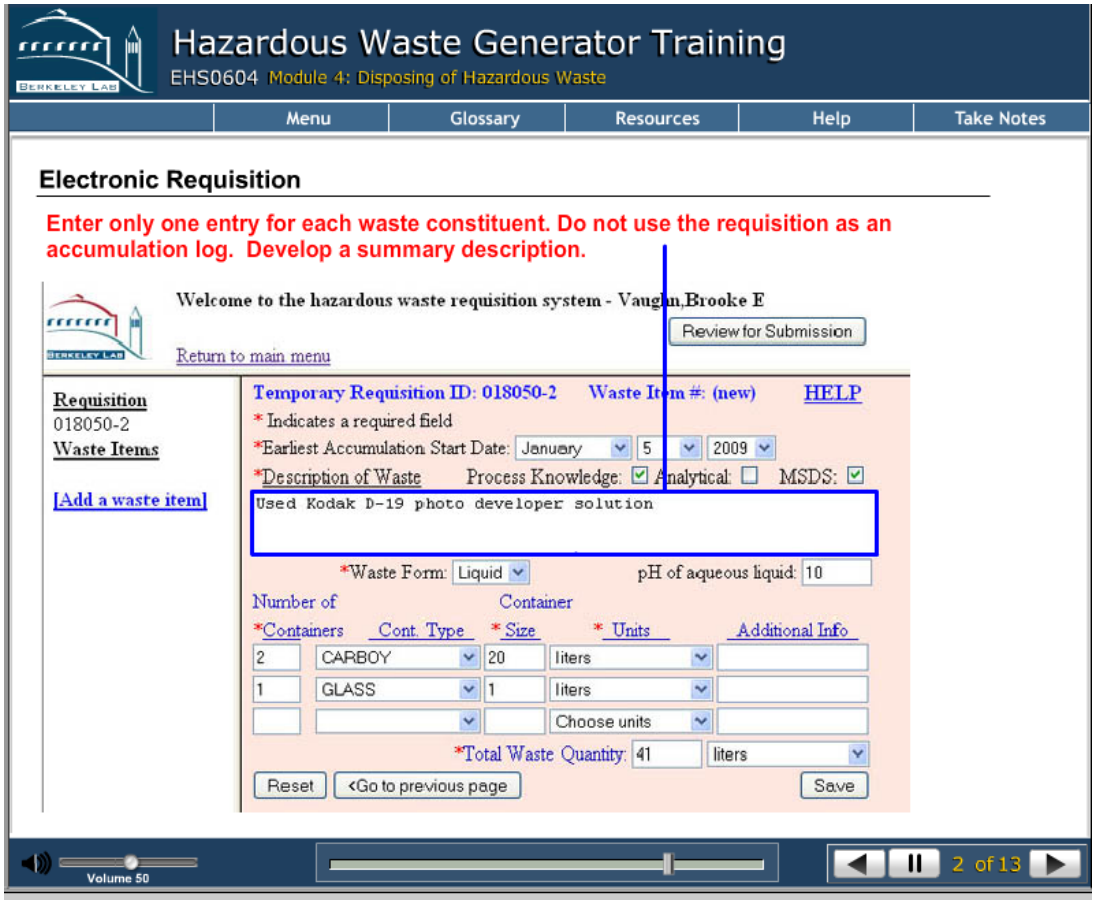
Important information to remember when filling out the requisition includes:



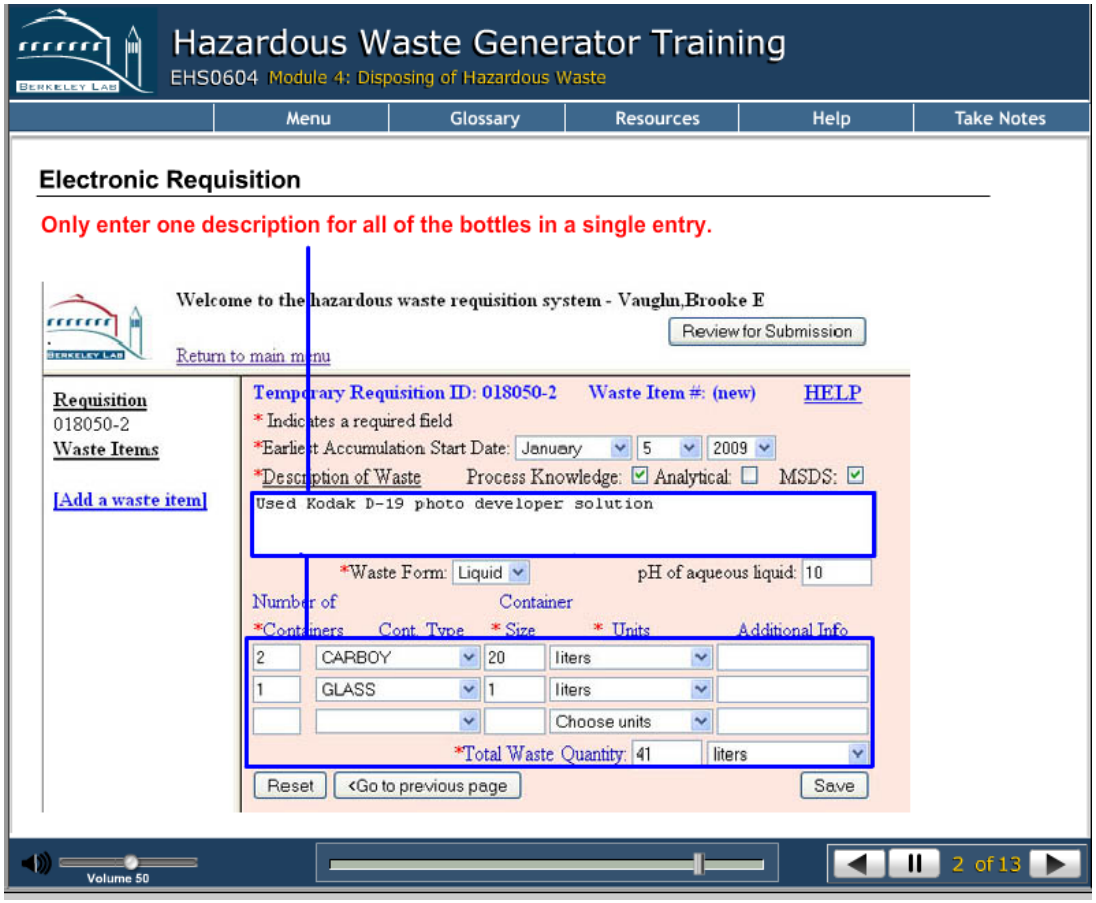
- Use characterization information such as: process knowledge, accumulation logs and MSDSs to complete the waste description in summary form



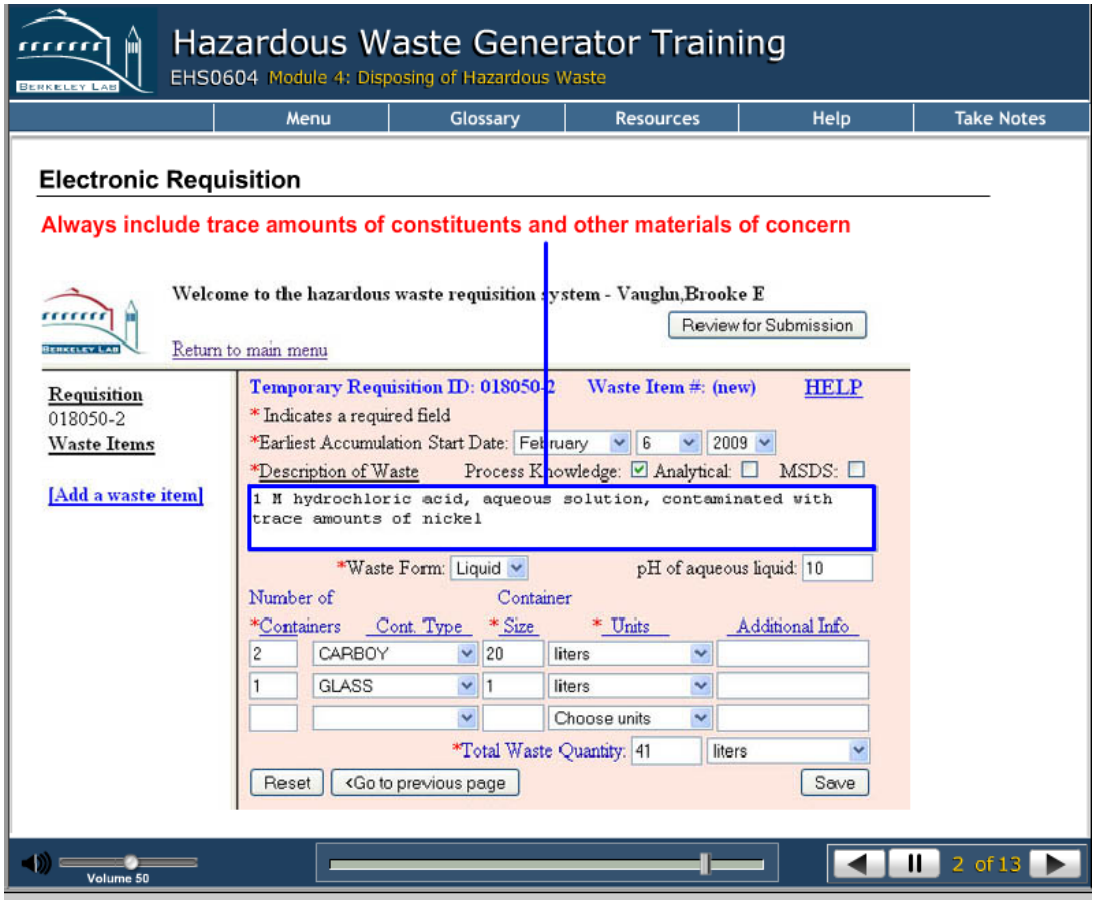
- Include hazardous and nonhazardous waste constituents



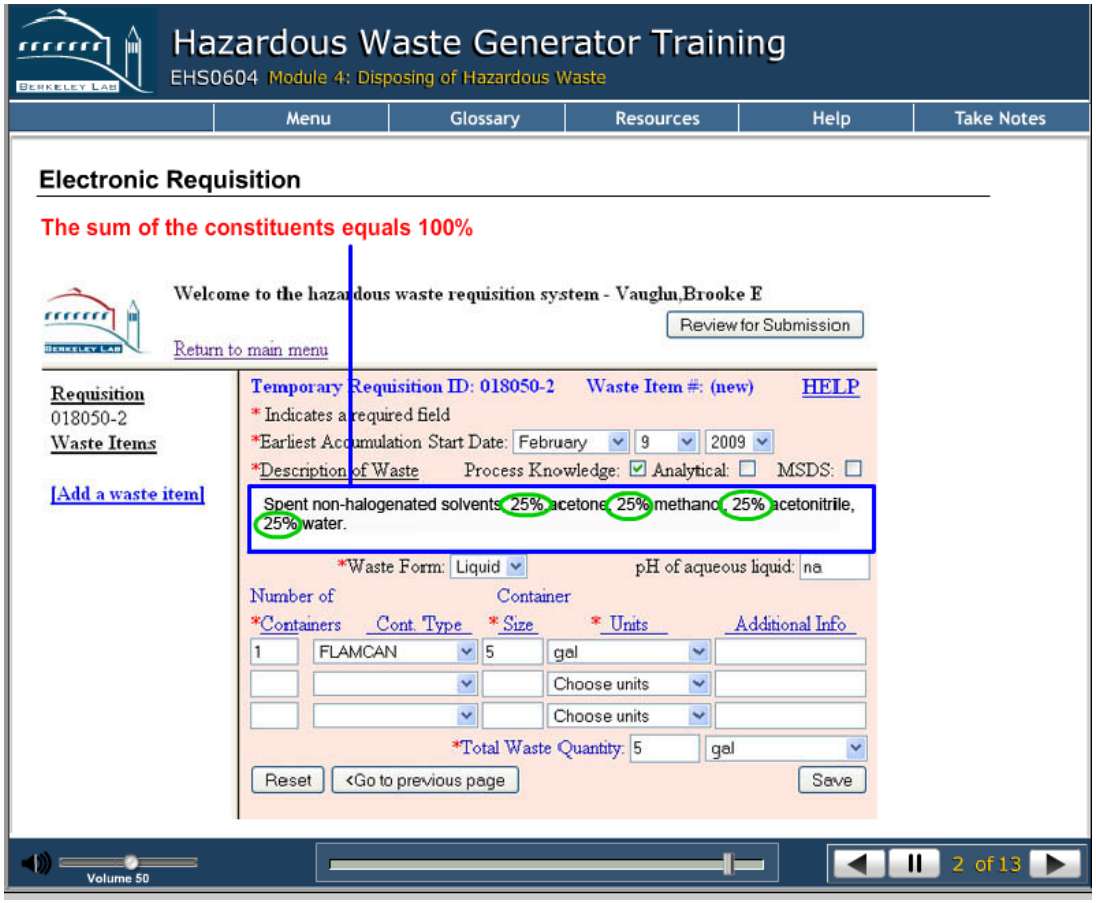
- Enter only one entry for each waste constituent. Do not use the requisition as an accumulation log. Develop a summary description.



- If you have multiple bottles of identical waste enter one description for all of the bottles in a single entry.

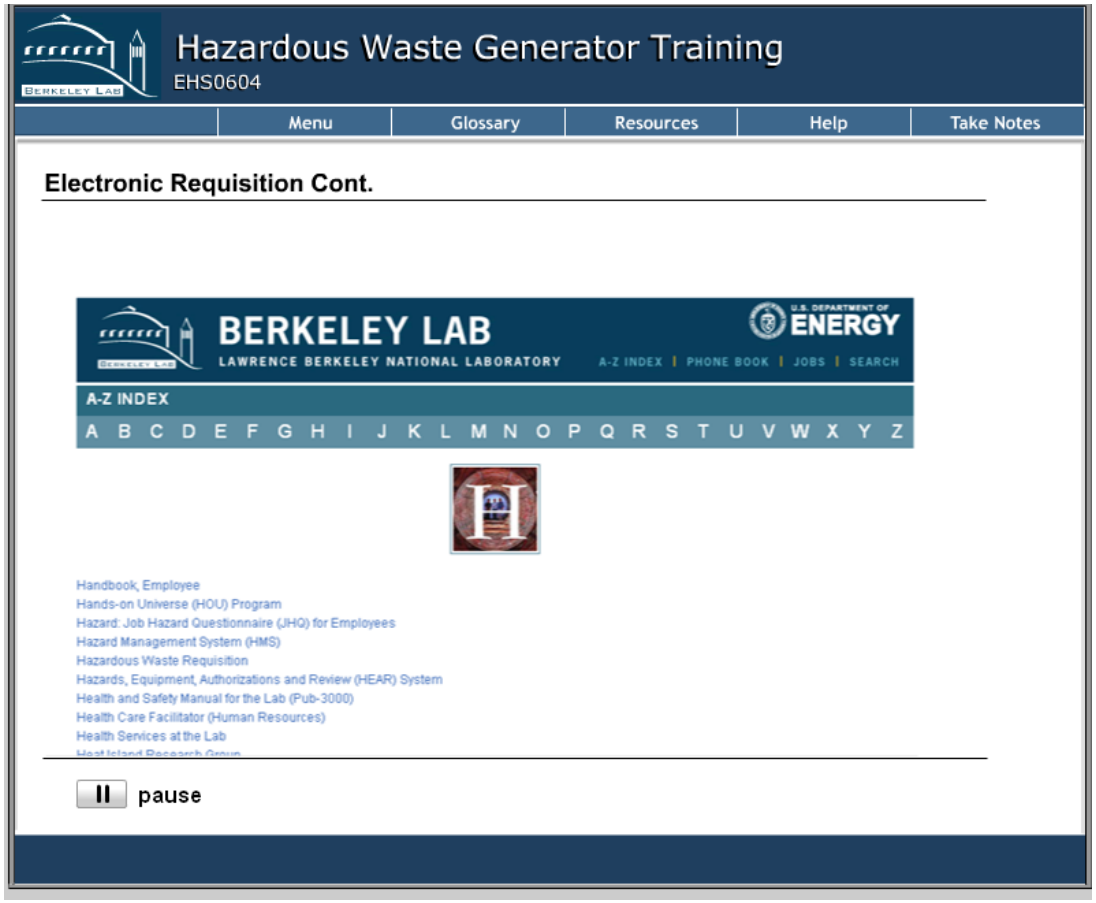


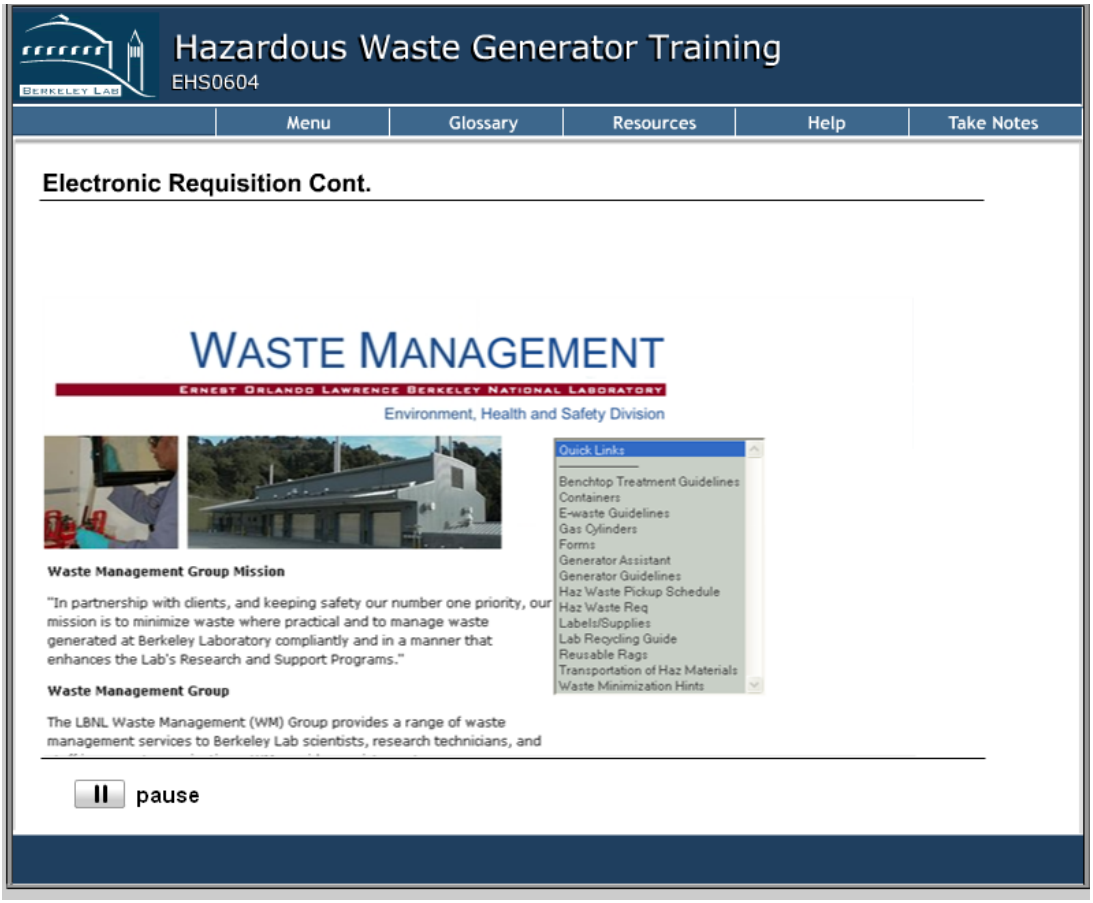
- Next, always include trace amounts of constituents and other materials of concern, such as nano materials.



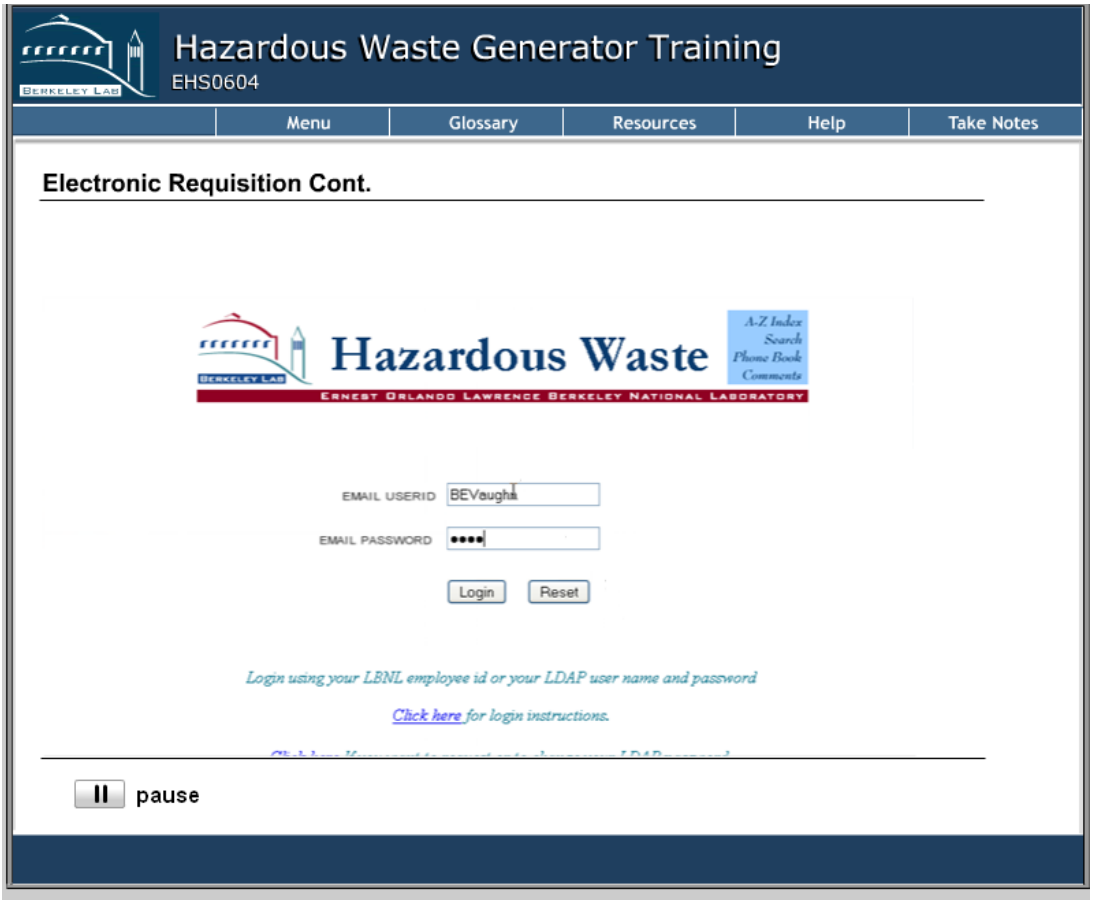
- Finally, make sure the sum of the constituents equals 100% or you have accounted for the entire waste composition in another acceptable way.

Electronic Requisition Cont.



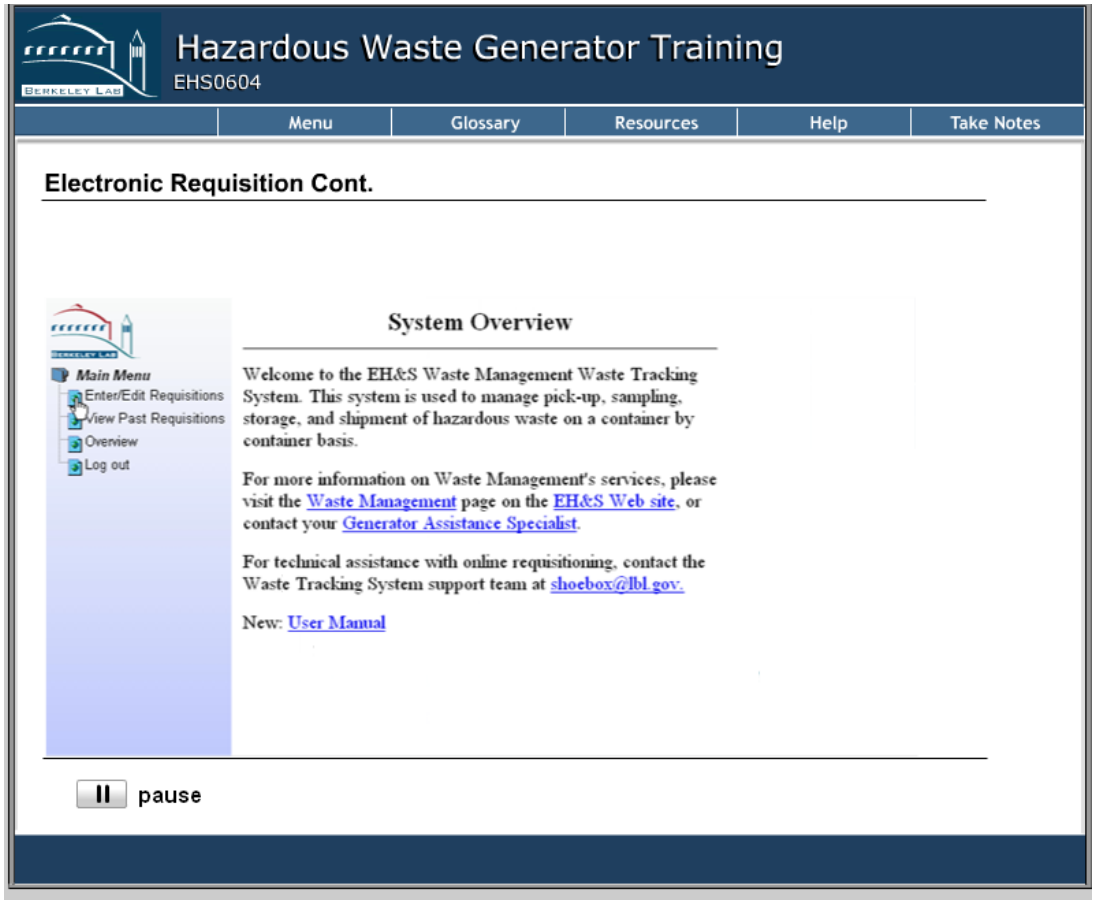


In order to access the online requisition you can either go to the A to Z index and select H for Hazardous Waste Requisition or go to the Waste Management website.

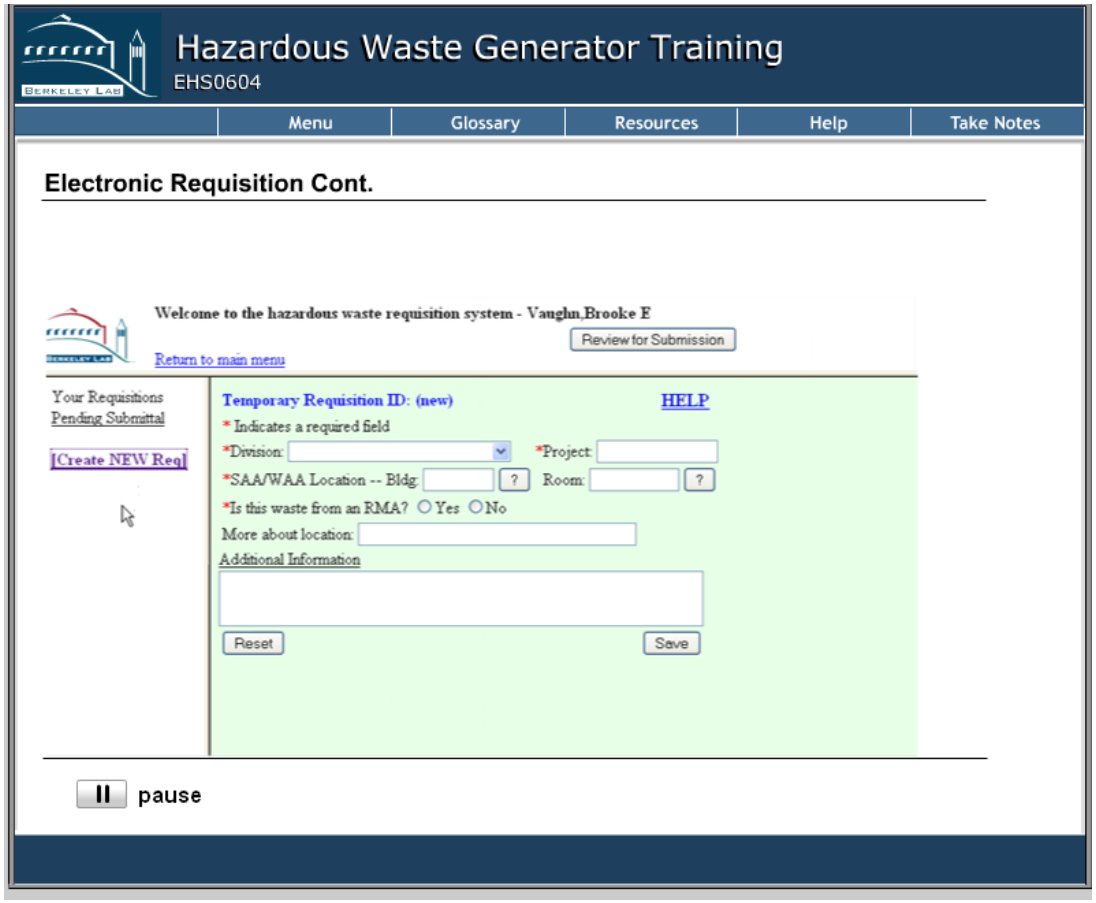


Once you get to the login screen you will need to login using your LDAP credentials.

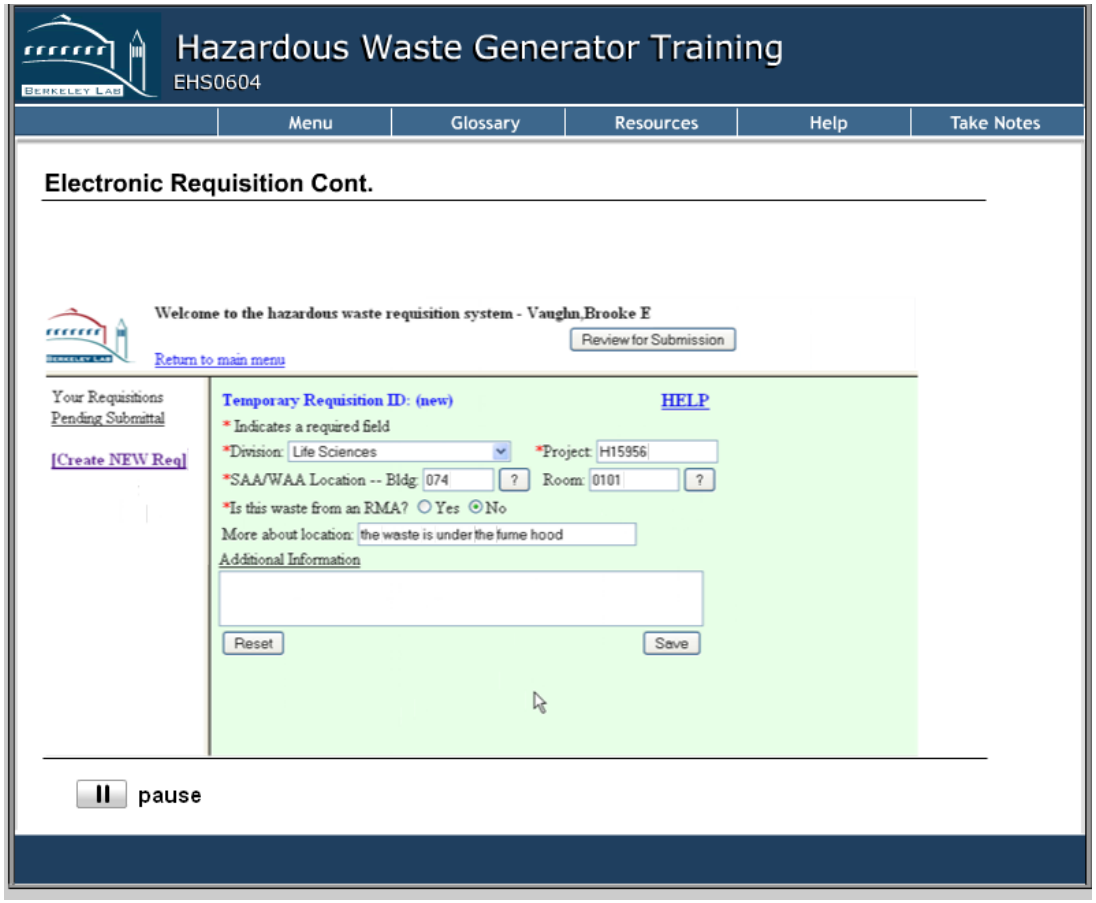
- The first screen you will see after logging into the system is the System Overview screen.



- From here you will want to select the option “Enter/Edit Requisitions” on the upper left side of the screen.

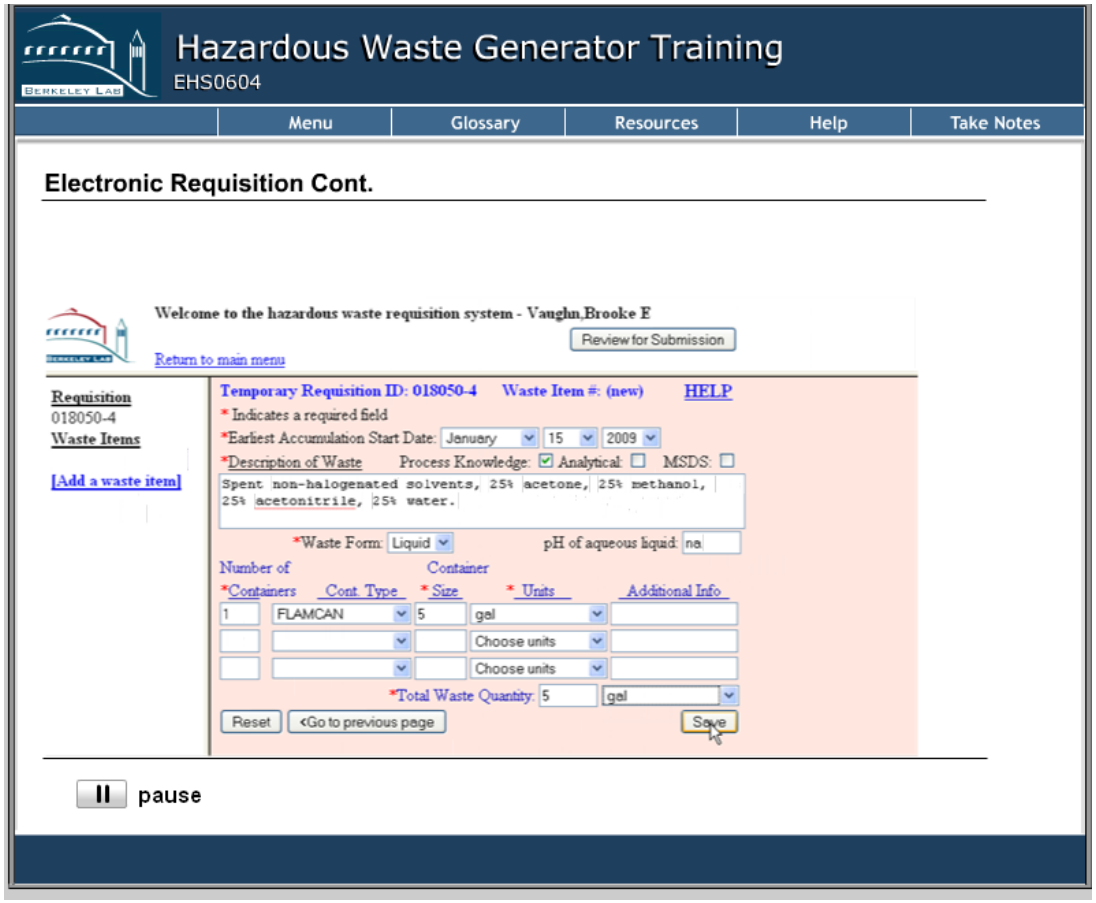


- Next select the option “Create NEW Req.”



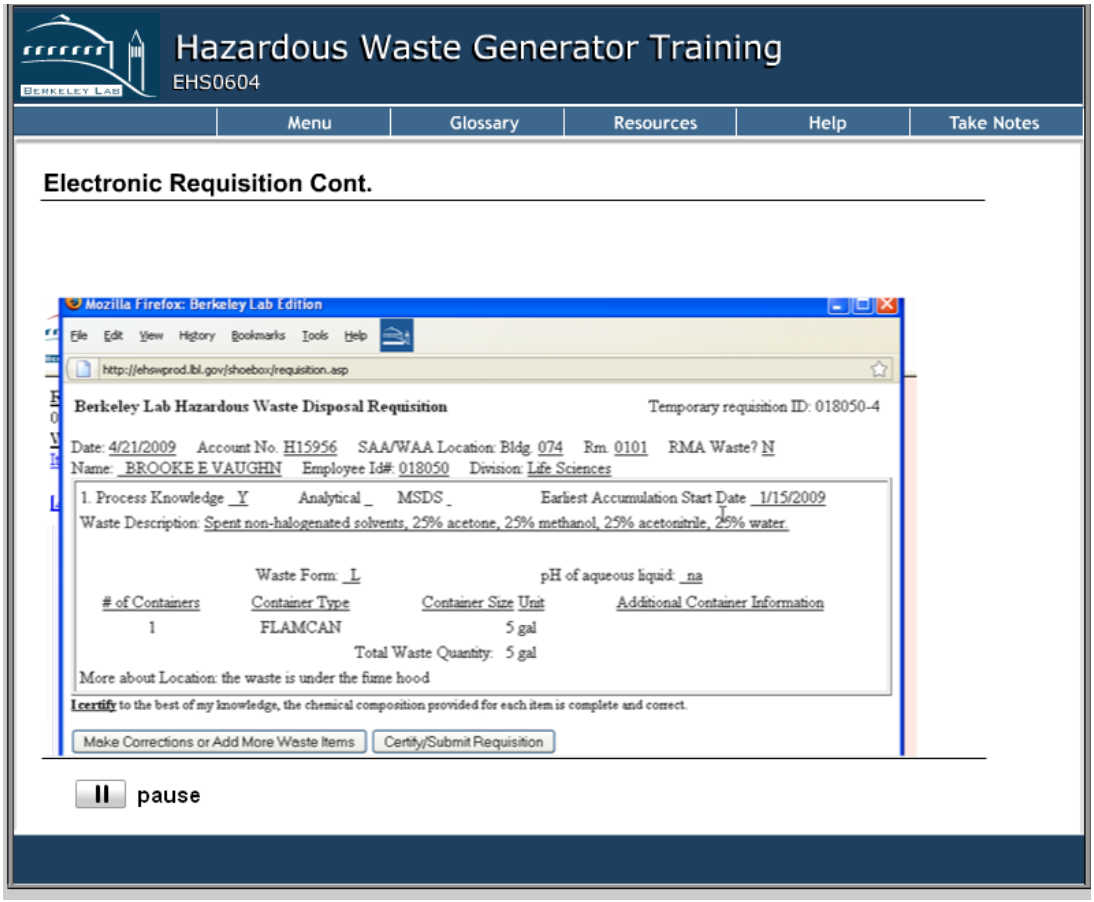
- Now you will see a screen that shows a Temporary Requisition ID.
  - On this screen you will need to select your division,
  - enter the project ID under which the waste was generated,
  - input the building number and room number in which the waste container is located,
  - Select yes or no if the hazardous waste was generated in a Radiological Material Area. If you select yes to this question you must fill out an RMA Waste Certification Form, which certifies the waste if free of radioactive contamination. You can find this form by going to the Hazardous Waste Group website. If you cannot certify that your waste is free of radioactivity, additional testing and analysis of the waste will be needed. Since your waste might require sampling and analysis, please allow an extra two to four weeks for pickup.
  - You may include more information about the SAA, such as location details, but it is not required.
- Now you will want to hit the save button to save what you have entered so far.

- After that click on the “Go to Description of Waste” button. This will take you to the next screen for filling out the requisition.

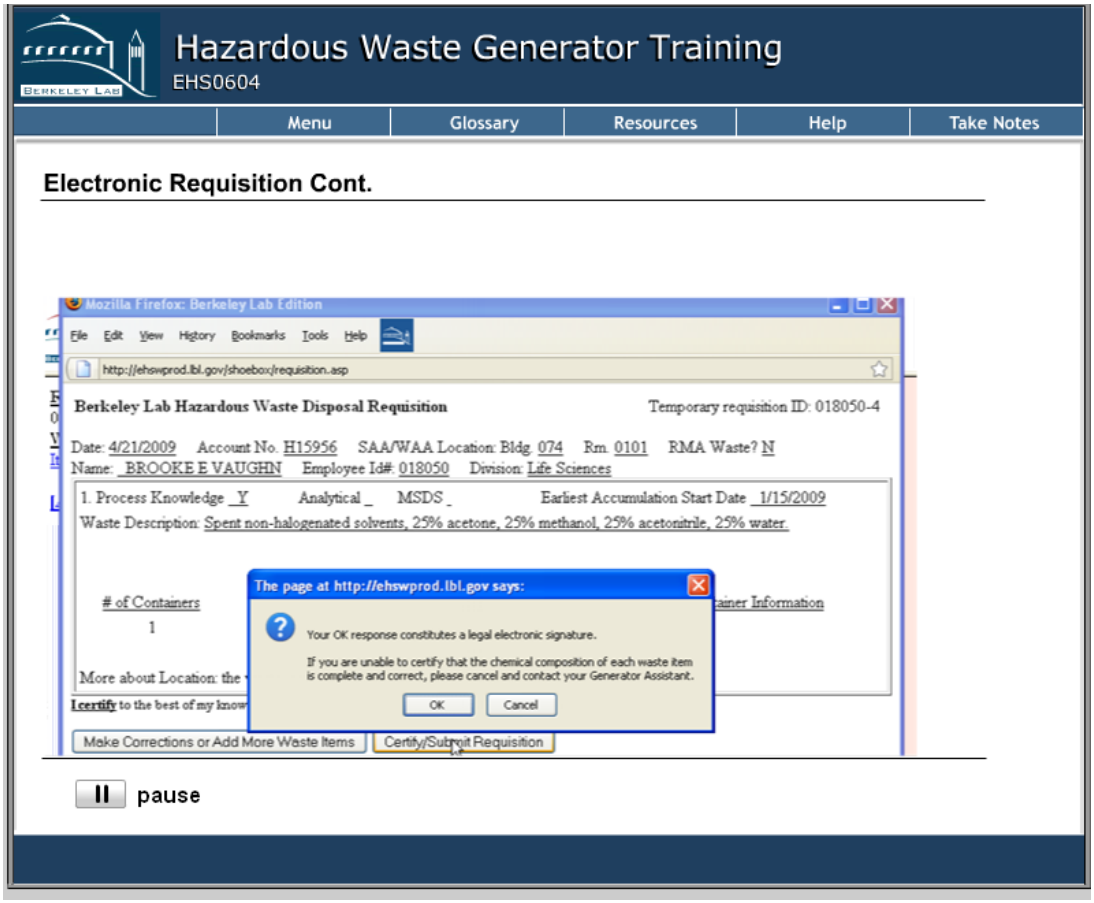


- On this screen you will need to enter specific information about each waste item you will be disposing of.
  - First, enter the date of the earliest accumulation start date. Remember this date is when you first added waste to the particular container for which you are about to enter information. You can also find this date by checking the SAA start date on the Hazardous Waste Label.
  - Notice there are check boxes for you to enter the basis for your waste characterization. It's important to specify how you were able to determine what is in your waste. I'm going to select Process Knowledge.
  - Next, you will need to enter a complete description of the waste. For example you may enter "Spent non-halogenated solvents, 25% acetone, 25% methanol , 25% acetonitrile, 25% water
  - Next you will need to select the Waste Form, which includes liquid, solid or gas. For this particular waste I'm going to select liquid. Because this is not an aqueous liquid I'm going to enter the letters NA to represent not applicable in this section for entering the pH.
  - Next, you need to enter the container information. Provide the total number of containers that contain the waste described in the description. There can be multiple containers of various sizes. In this case I'm going to enter one Flamcan container that is 5 gallons in size. Then enter the total waste quantity.

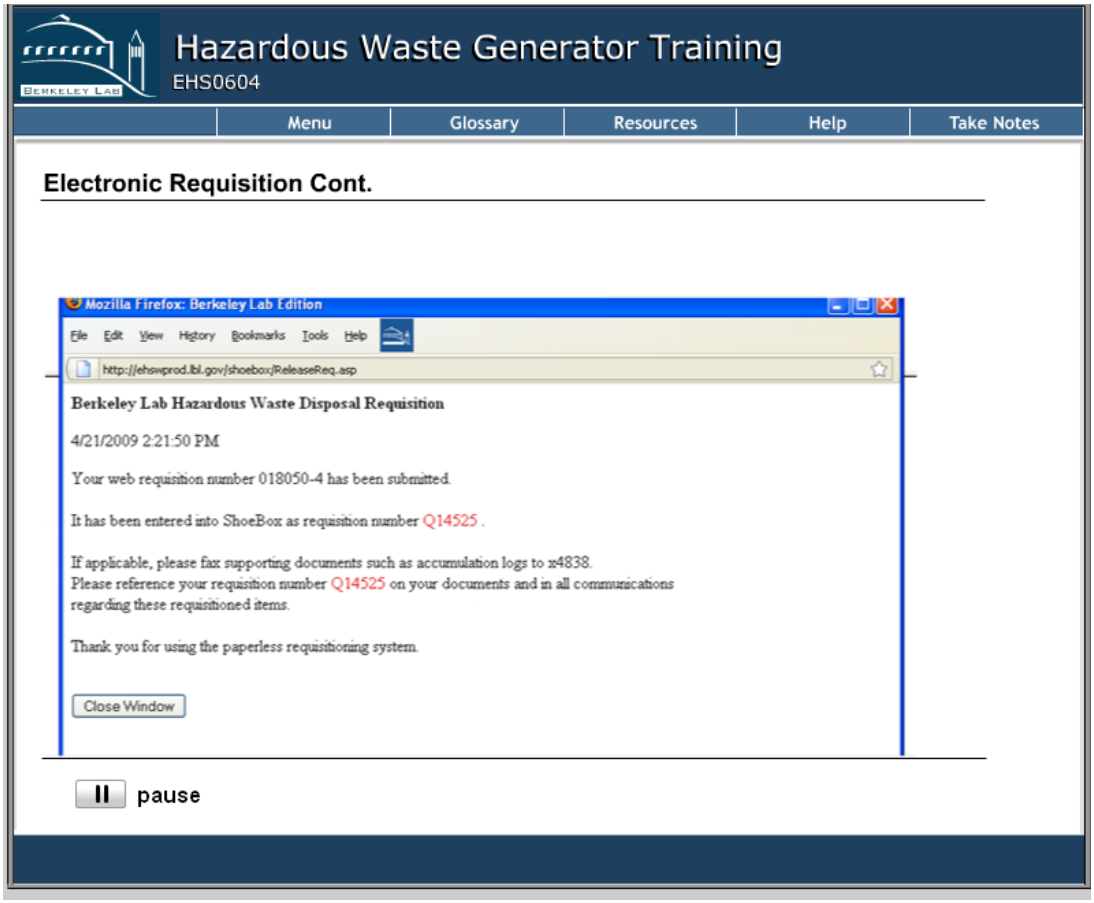
- When you have completed the information for the waste item, click the save button
- If you had more waste to enter, you would select the button “Add another waste item.” And then follow the same steps we just went through.
- Once you have entered all the waste information for each item click on the review for submission button.



- When you click on the review for submission button a report will be generated, displaying all of the information you just entered in to the electronic requisition system.
- You will need to review it to make sure no mistakes were made and if you need to correct anything to make sure to click on the “Make Corrections or Add More Waste Items”
- If all the information is correct, then you will click on the “Certify/Submit Requisition” button.

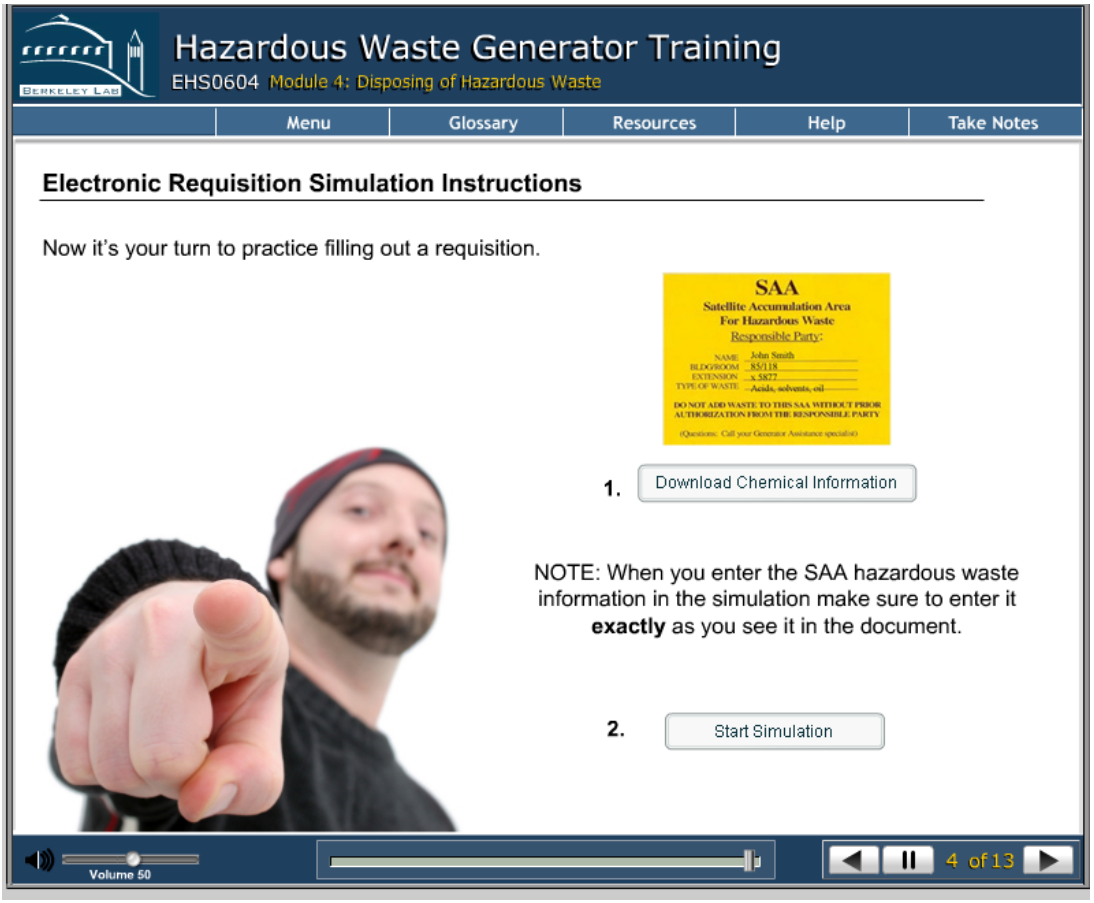


- Once you do this then you will get a response that asks you to certify that each chemical composition of each waste item is complete and correct. If you click ok, you are stating that the requisition is correct. If you click cancel you can go back and make any necessary corrections.



- I'm going to click ok, since I know the information entered is correct. Once you do this then you will get a notification that the requisition has been submitted.
- The next step you will need to do is fax any supporting documents such as accumulation logs or RMA certification to ext. 4838 for the requisition you just submitted. When I submit the fax I will need to make sure I reference the requisition number which the system assigned. This will be a number that is preceded by the letter "Q".

Electronic Requisition Simulation Instructions

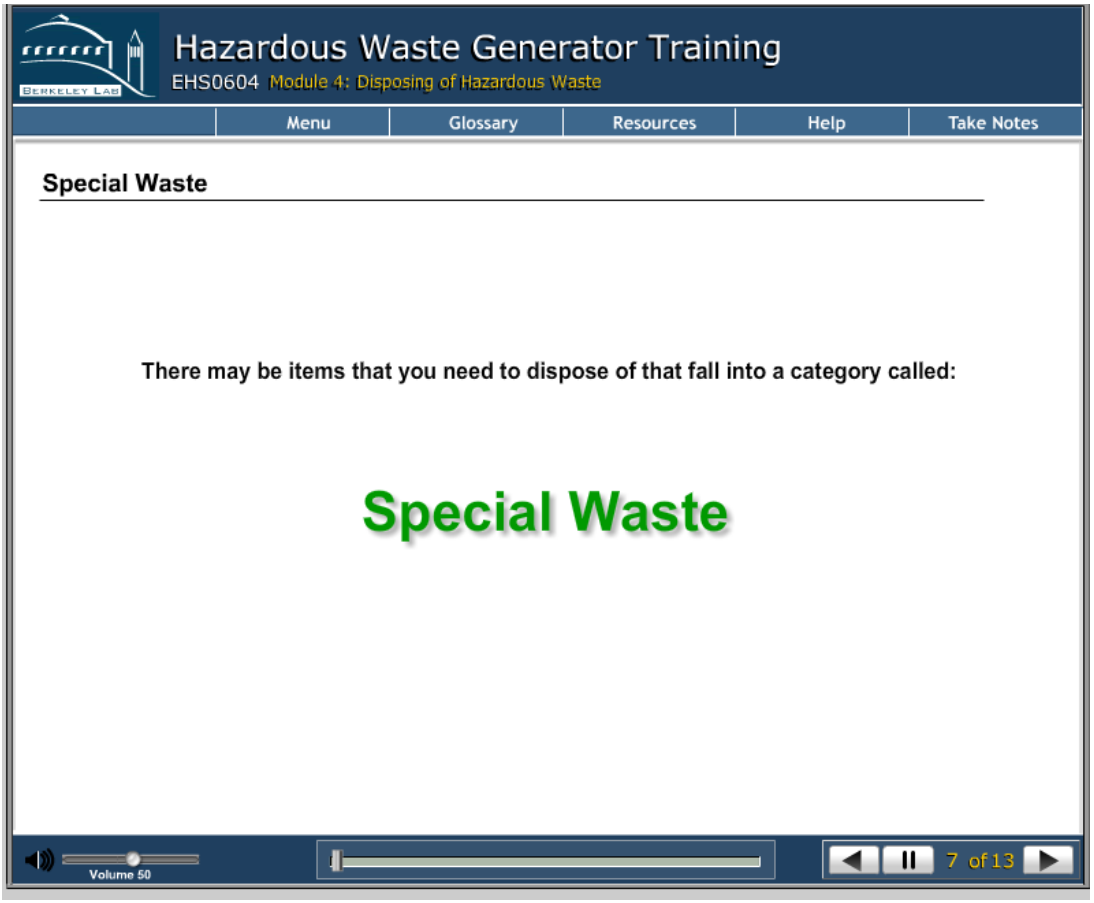


Now it's your turn to practice filling out a requisition. First download the SAA hazardous waste information you will be entering into the electronic requisition system by clicking on the "download chemical information" button. You may want to print this information out to more easily reference during the next part of this course.

NOTE: When you enter the SAA hazardous waste information in the simulation make sure to enter the text exactly as you see it on the document you download.

Once you have done this and are ready to start filling out an example requisition, click on the "start simulation" button. This button will take you into a guided simulation.

Special Waste



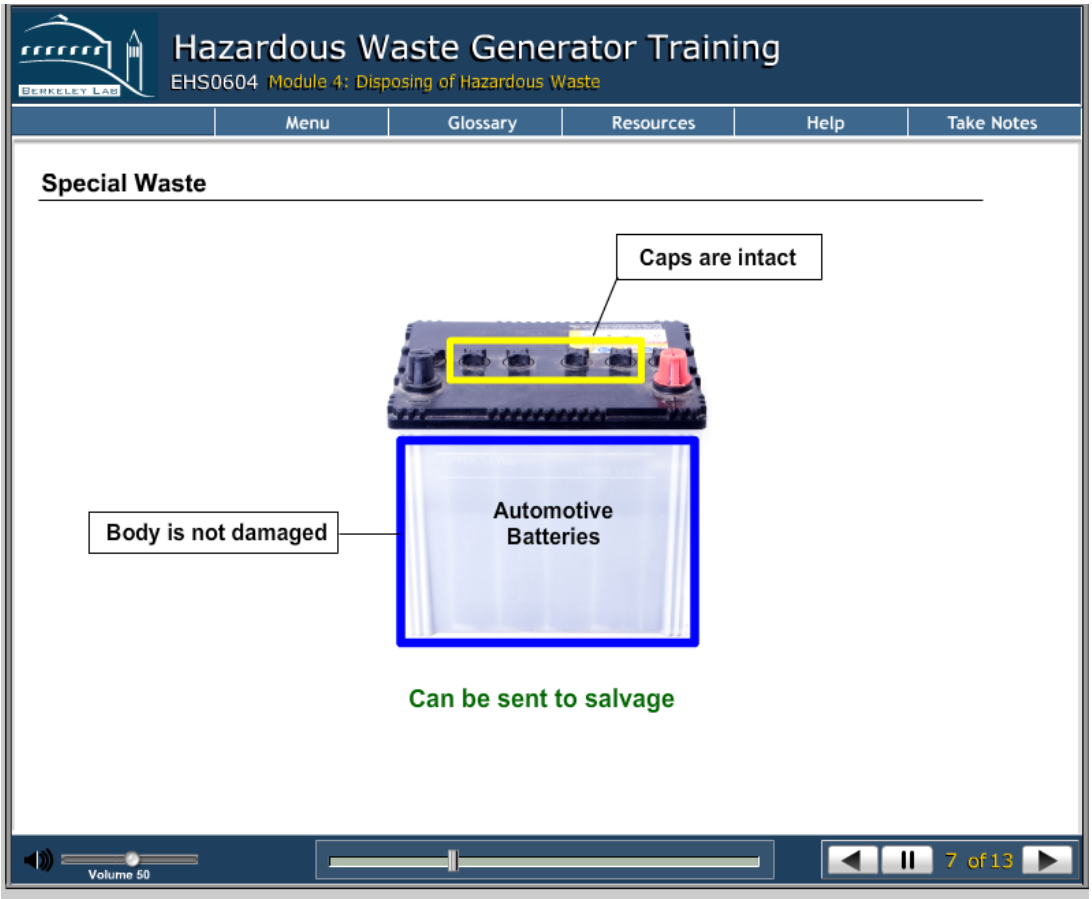
There may be items that you need to dispose of that fall into a category called special waste.

These items could include: non-biohazardous sharps, empty containers, Polychlorinated biphenyls, e-waste, universal waste, aerosol cans, and epoxy materials. The following information will help instruct you on how to properly dispose of these items.

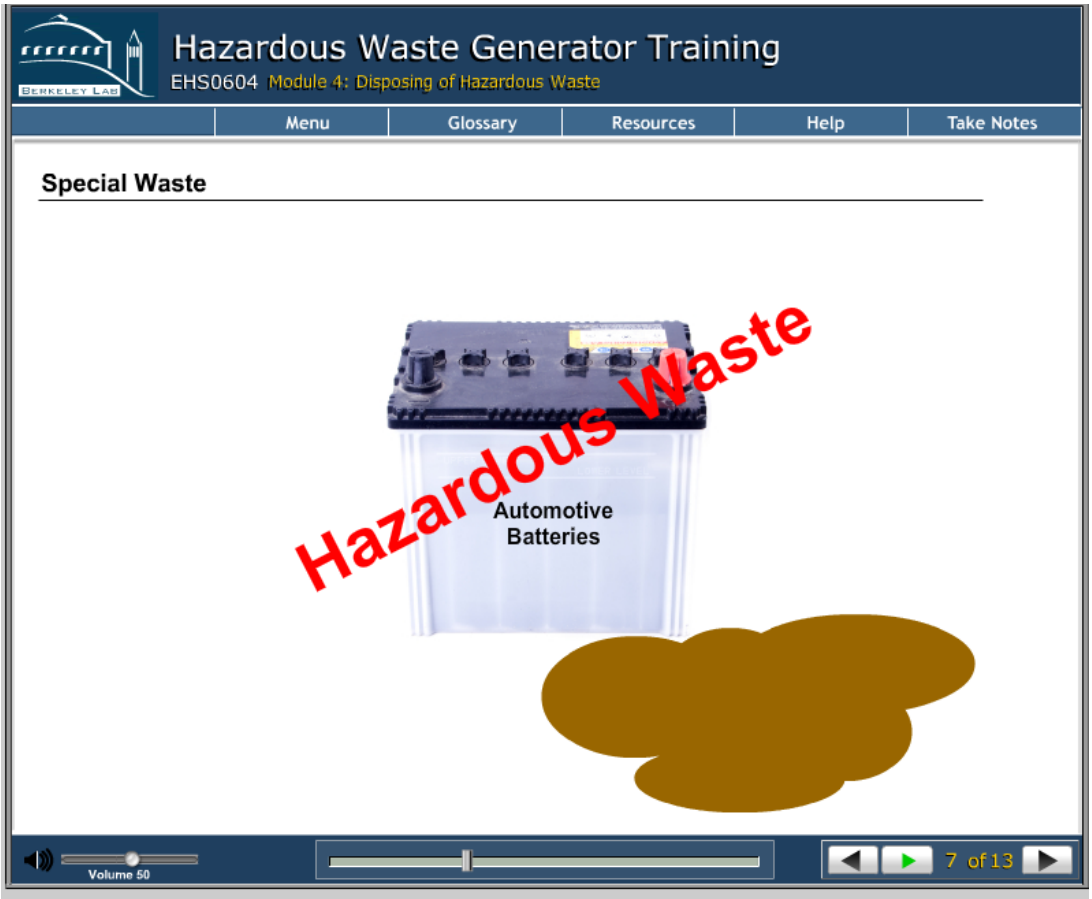
First, if you need to dispose of non-biohazardous sharps use the plastic sharps container. Be sure to cover the biohazard symbol and label the container “Non-regulated Sharps”

Next, Waste Management provides green collection buckets for used nickel cadmium; nonspillable, nonleaking lead acid; lithium; and alkaline batteries. Place your batteries in the green collection bucket labeled as Universal Waste.

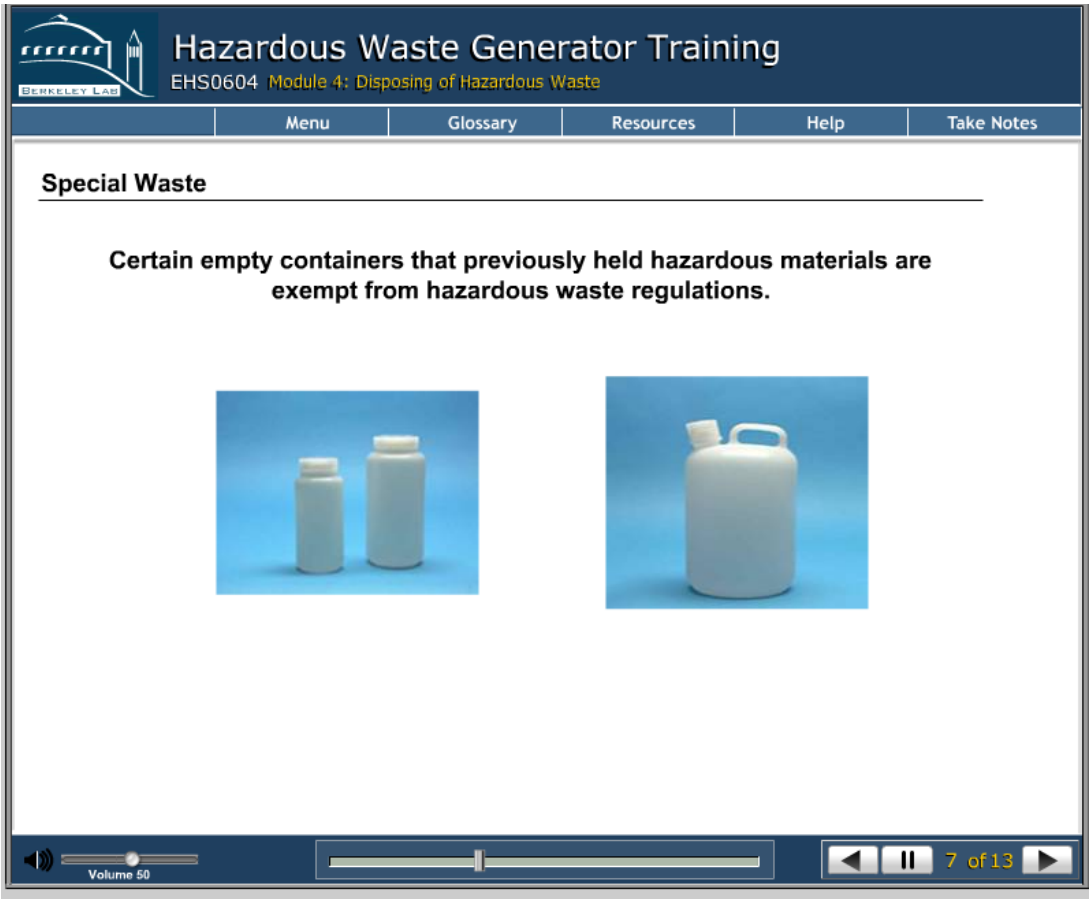
All batteries with leads that may accidentally short out must have the leads taped with electrical tape supplied on the bucket to prevent the possibility of fire or sparking.



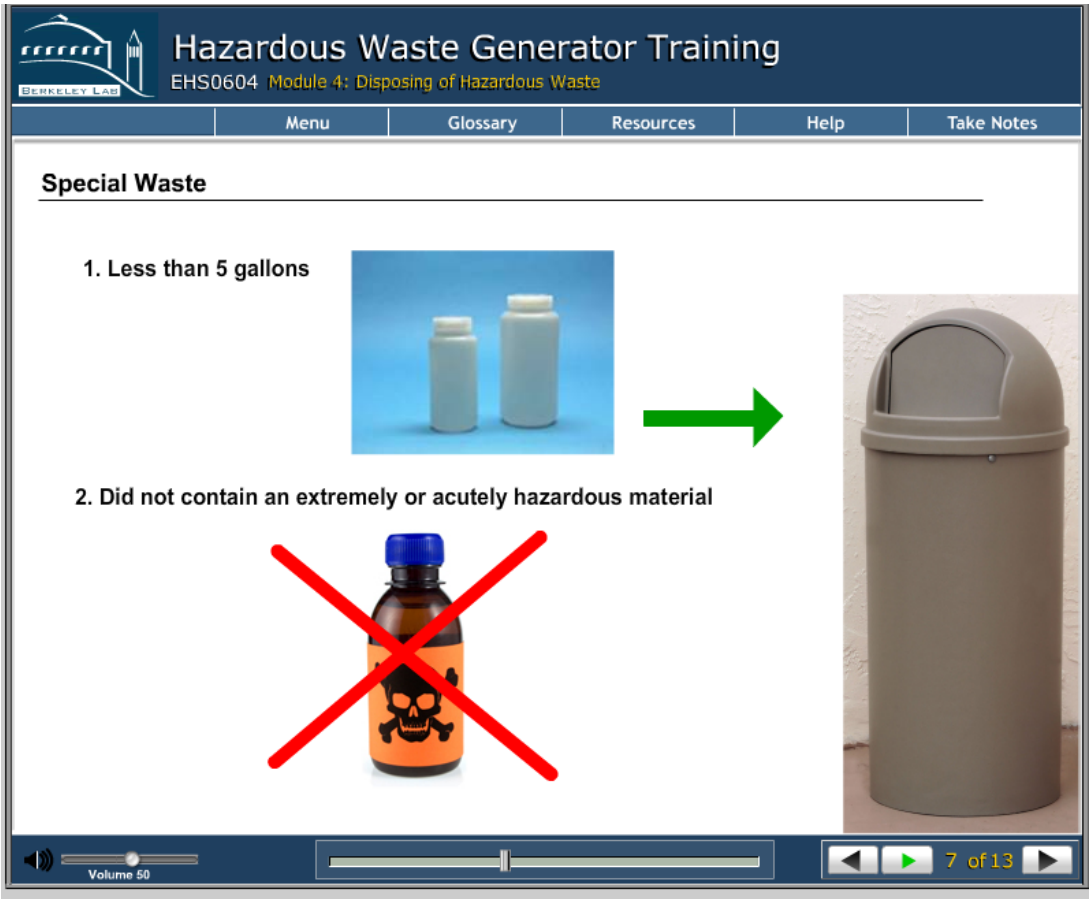
Automotive batteries (lead acid) can be sent to salvage as long as the caps are intact and the body is not damaged or cracked. A waste requisition is not required.



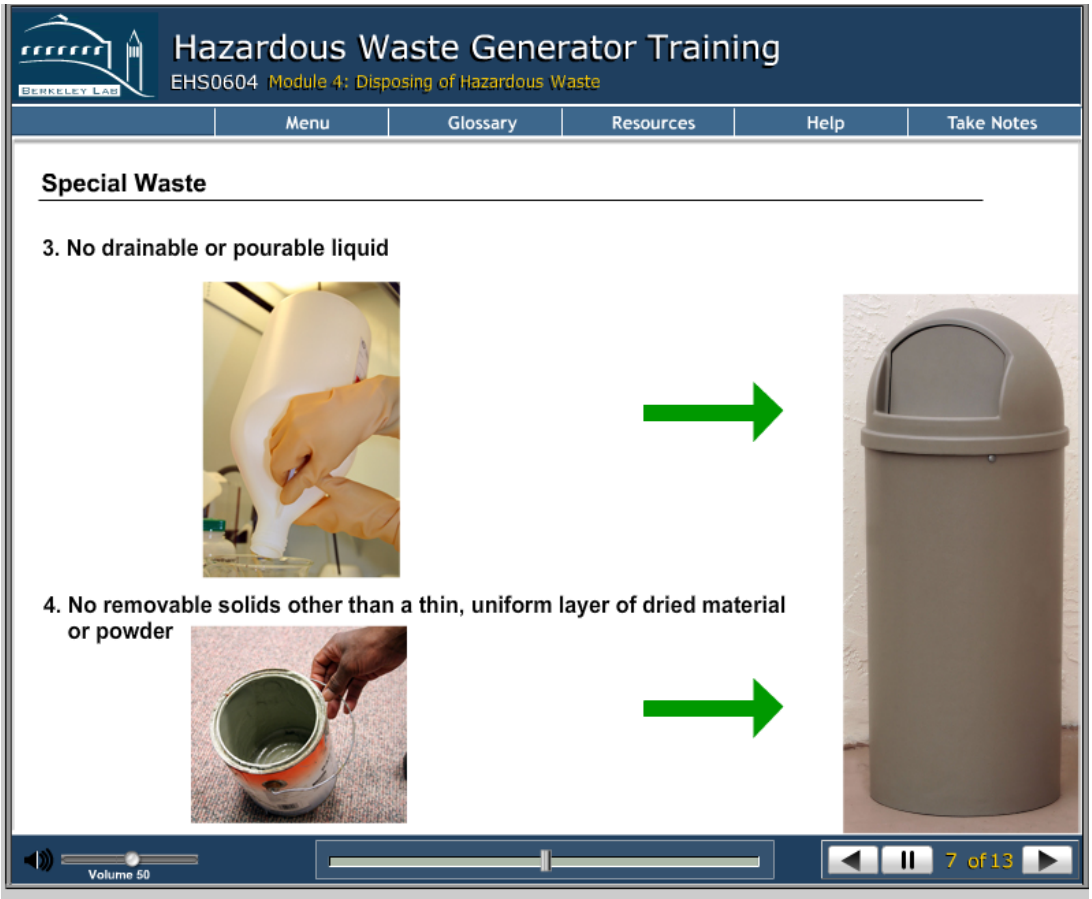
If you have leaking lead-acid batteries, these are regulated as hazardous waste and must be requisitioned in the normal process.



Certain empty containers that previously held hazardous materials are exempt from hazardous waste regulations and can be discarded as solid sanitary waste under the following conditions:

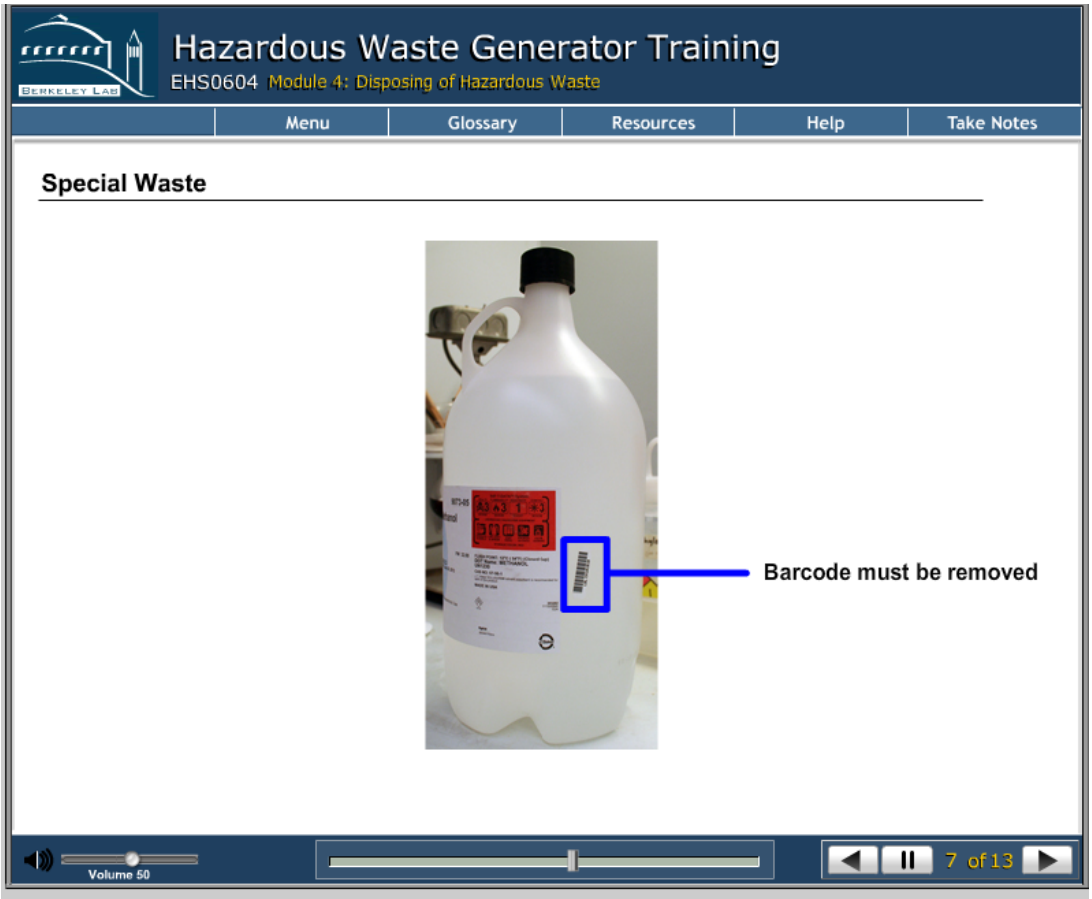


- The container must be < 5 gallons in size.
- The container did not contain an extremely or acutely hazardous material. For more information on extremely or acutely hazardous materials see the generator guidelines or the glossary in this course in the resources section.

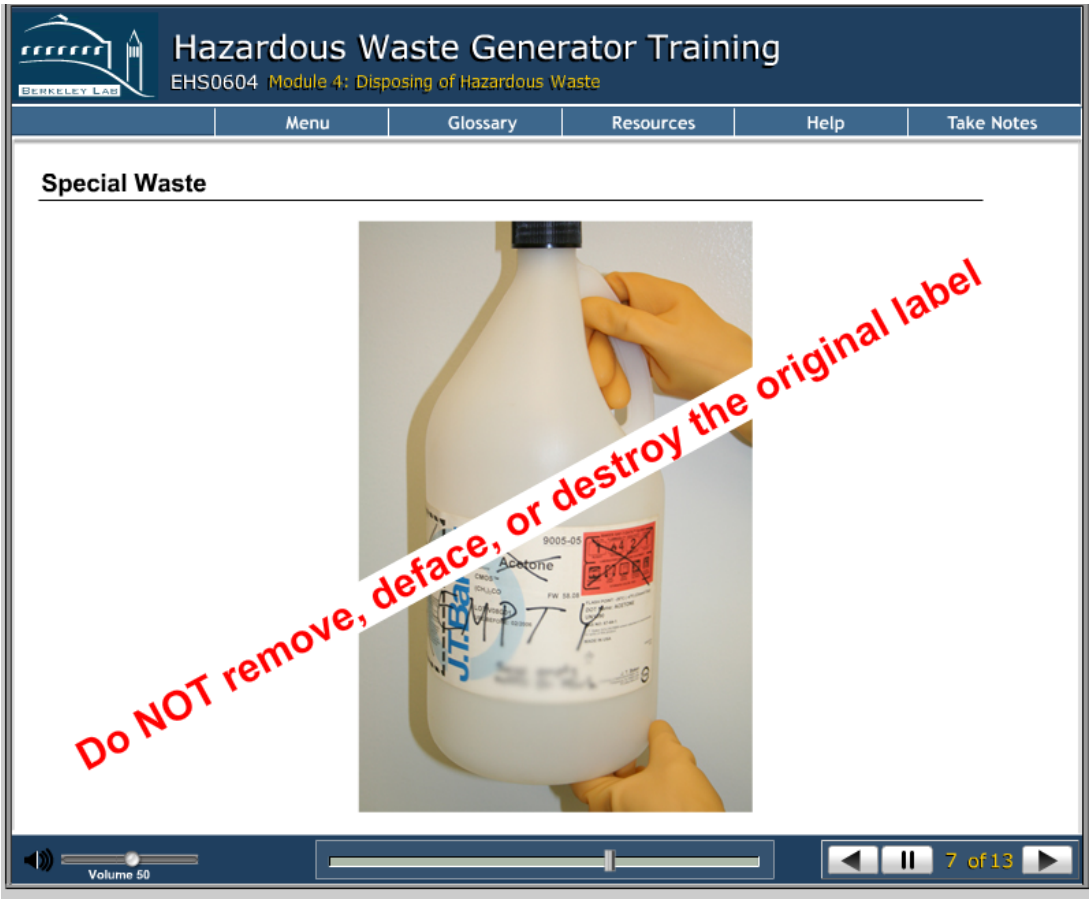


- Without rinsing, the container contains no drainable or pourable liquid when held in any orientation.
- Without rinsing, the container contains no removable solids other than a thin, uniform layer of dried material or powder.

If your container meets the criteria previously mentioned, then the container may be thrown in the trash, and the following steps must be completed:



- The container must be deleted from the Chemical Management System, and the barcode must be removed from the container.



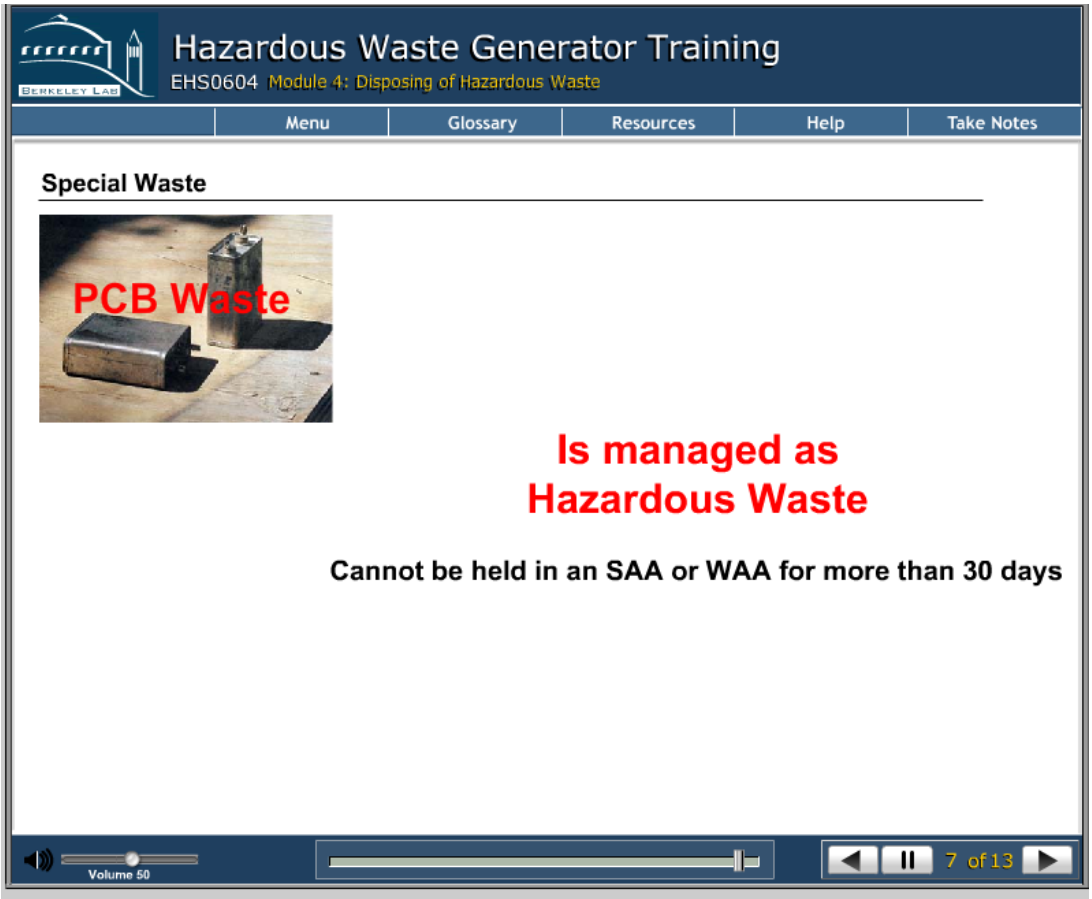
- The original label must be crossed out and marked with the word EMPTY to notify custodial staff, recyclers, or sanitary waste engineers that it no longer contains hazardous materials, and can be discarded as solid sanitary waste. Do not remove, deface or destroy the original label. It must be retained as proof of the prior contents.

Before federal regulations limited Polychlorinated Biphenyls, also known as PCBs production and use, PCBs were commonly used in a variety of commercial products, such as:

- Adhesives
- Microscope immersion oil
- Transformers
- Large high and low voltage capacitors
- Liquid –cooled electronic motors
- Hydraulic systems
- Heat-transferred systems, and
- Electromagnets, to name a few

The manufacturing of PCBs is no longer authorized under Federal and State regulations; however, PCB use is allowed only under specific conditions, in limited scenarios. Waste generators must remember that old equipment might still contain PCBs, even if it has been flushed out several times.

If a large piece of oil-containing equipment is to be disconnected and not reused, please contact Waste Management early in the planning stages so that they can set up a WAA and arrange shipment to meet regulatory requirements.

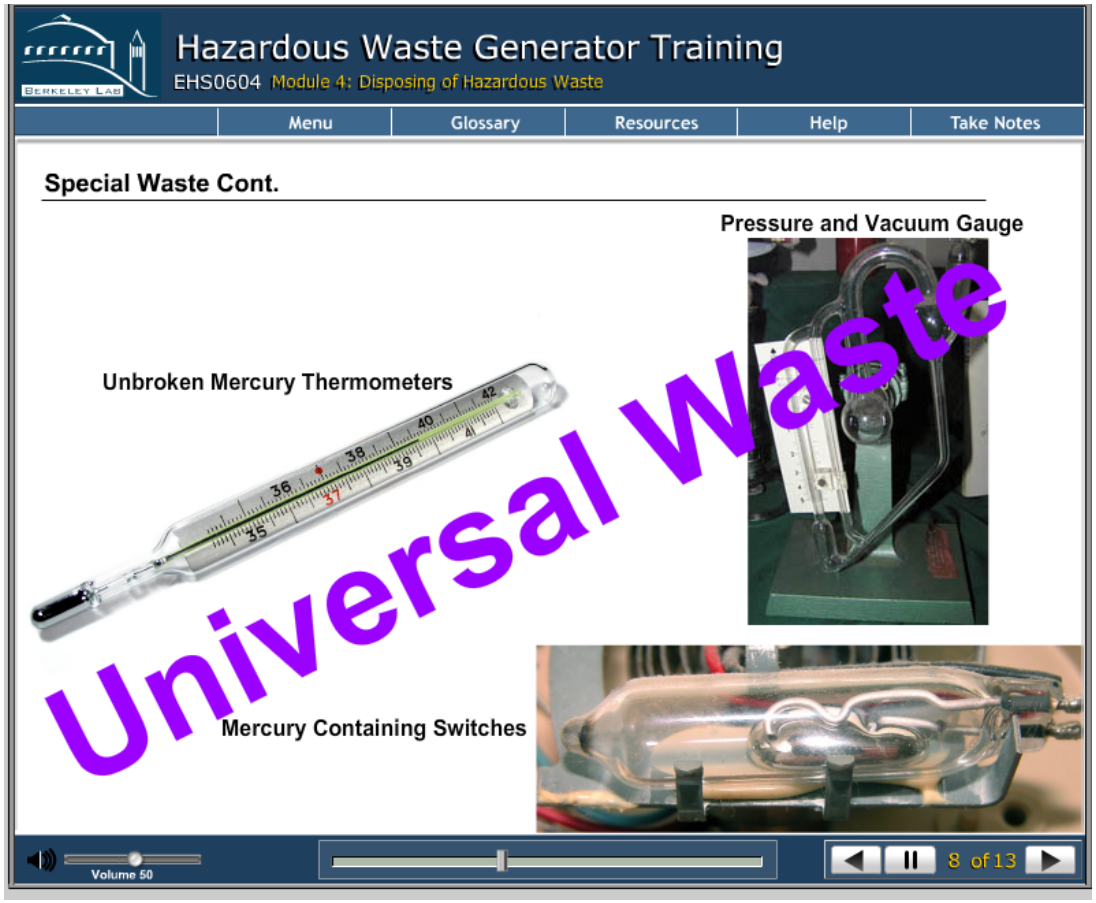


Note: PCB waste is managed just as any other hazardous waste is managed, except this type of waste cannot be held in an SAA or WAA for more than 30 days. It must immediately be placed on a hazardous waste requisition to request pick up.

Special Waste Cont.

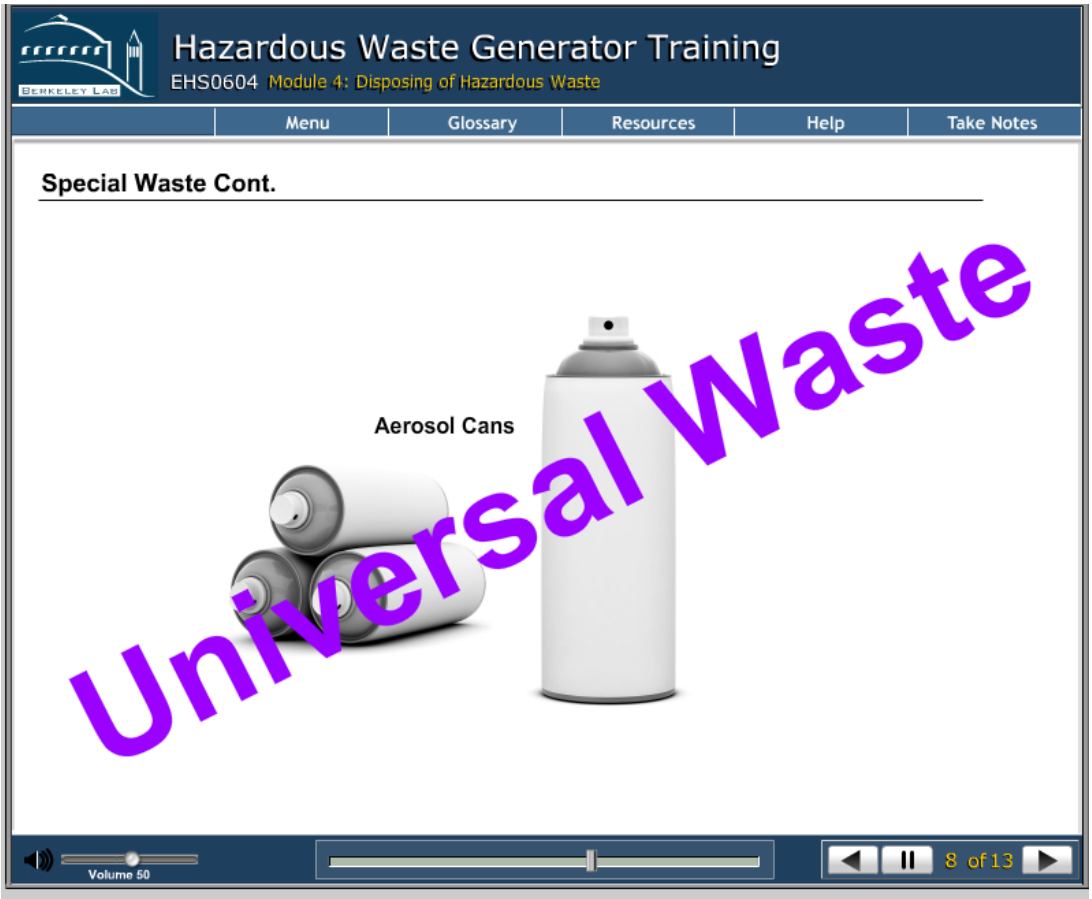
Another special type of waste includes e-waste. A few of the items that are a part of e-waste include nonfunctioning computer monitors, televisions, cash registers, computers, telephones, stereo equipment, video cassette players/recorders, calculators, microwave ovens and many more. In general, if a nonfunctioning item has a printed circuit board, then it is e-waste.

The regulations require generators and/or owners to properly handle and store e-wastes to prevent the release of lead or other hazardous constituents to the environment. The regulations prohibit the disposal of e-wastes in municipal landfills and encourage owners and generators of e-wastes to properly recycle the wastes or arrange for their reuse whenever possible. If you have nonfunctioning e-waste, apply a Universal Waste label to the item and contact Waste Management for pickup. A waste requisition is not required. Remember to follow your divisions' process to remove the item from your property record.



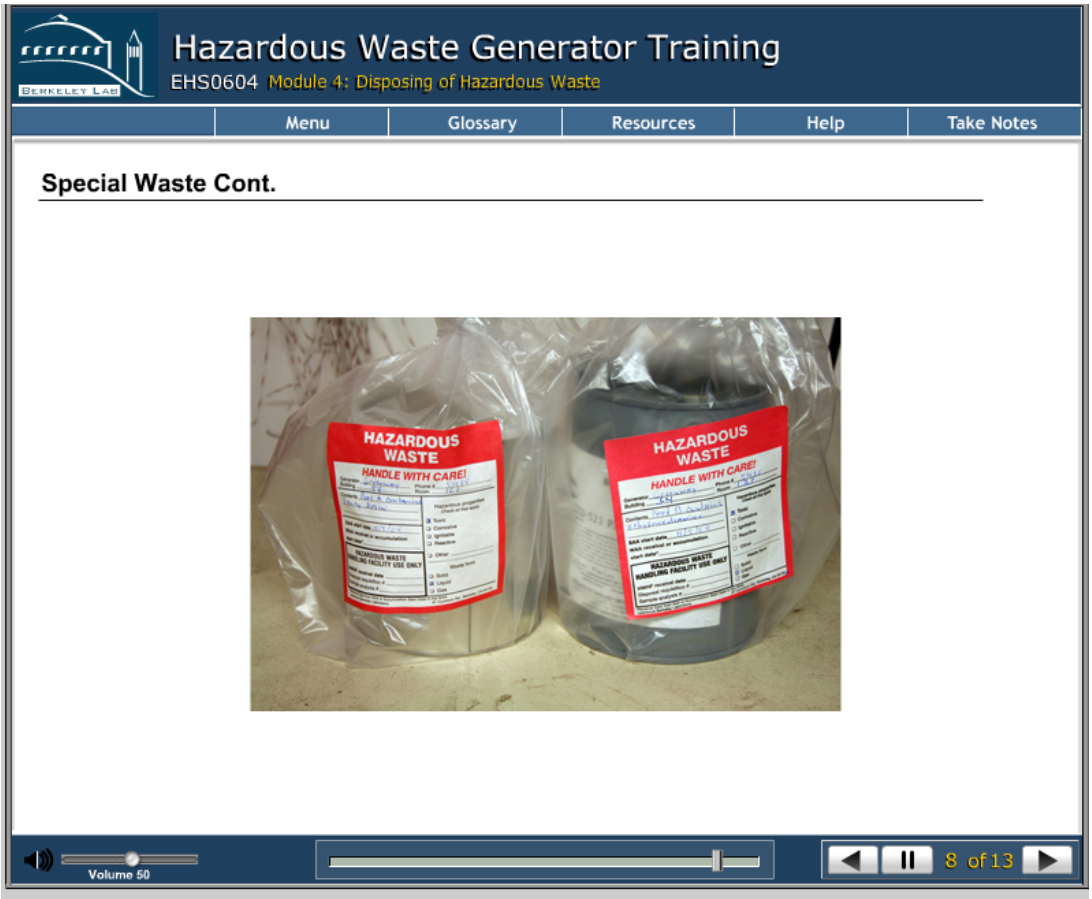
Unbroken mercury thermometers, mercury containing switches, Pressure and Vacuum gauges are also categorized as universal wastes. These should be labeled with a Universal Waste label. A waste requisition is not required. Notify either your Generator Assistant or Waste Management for pickup.

While not common, some divisions use over-the-counter drugs, pharmaceuticals, or controlled substances in their research or operation. Regardless of their use, the disposal of the unused portion of these items is strictly controlled. If you have these items, please contact your generator assistant for more information on how to dispose of them.

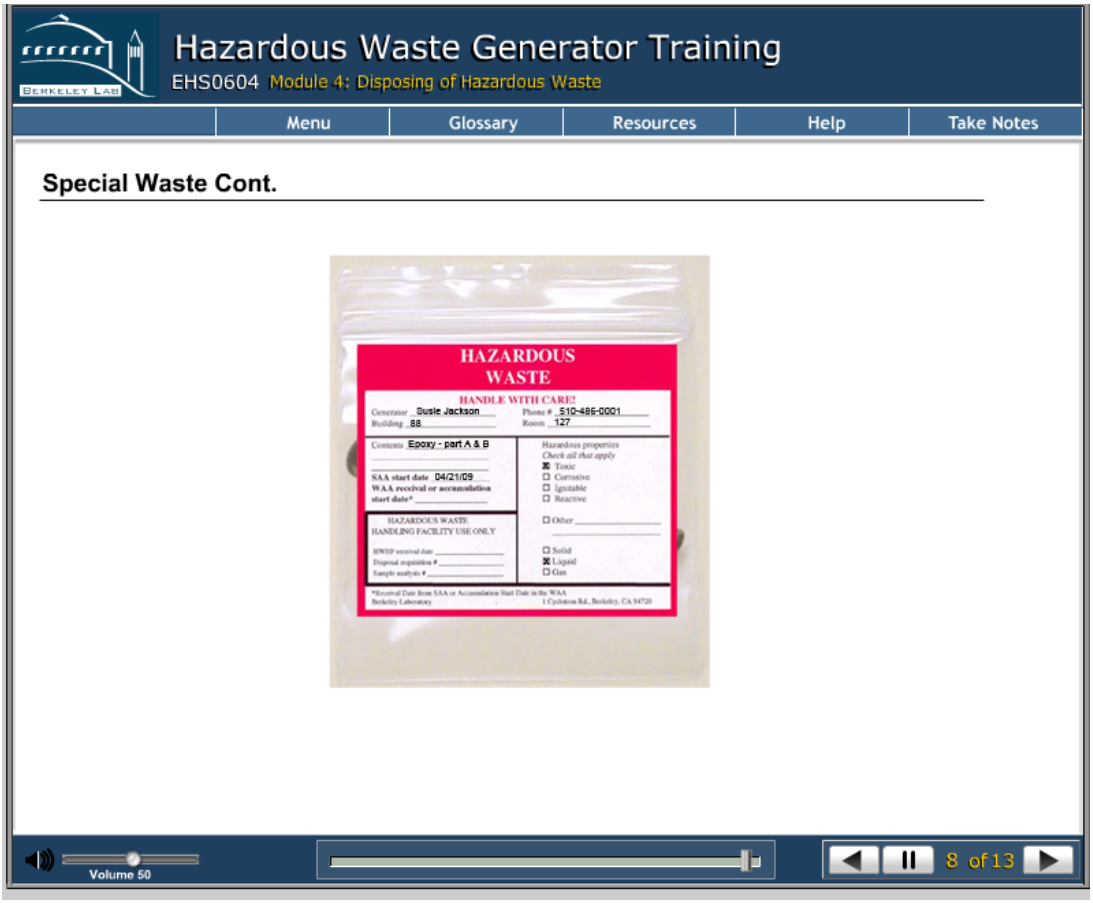


Waste aerosol cans are now managed as universal waste, no longer requiring hazardous waste labeling, requisitions, etc. These aerosol cans are primarily used in Facilities and Engineering Divisions and contain paints, degreasers, lubricants and penetrants. Collection points for Engineering and Facilities staff have been identified. However, if you are outside of these organizations and have an aerosol can you wish to dispose of, contact Mark Lasartemay at x6825 for instructions.

Epoxy materials come in two parts. In most instances, Part A is the resin, and Part B is the hardener. Once blended together, any excess, unused material is nonhazardous and can be disposed of in the sanitary trash. If there are unwanted, unused portions of the Part A and Part B materials remaining in the original containers, these are required to be managed as hazardous wastes.

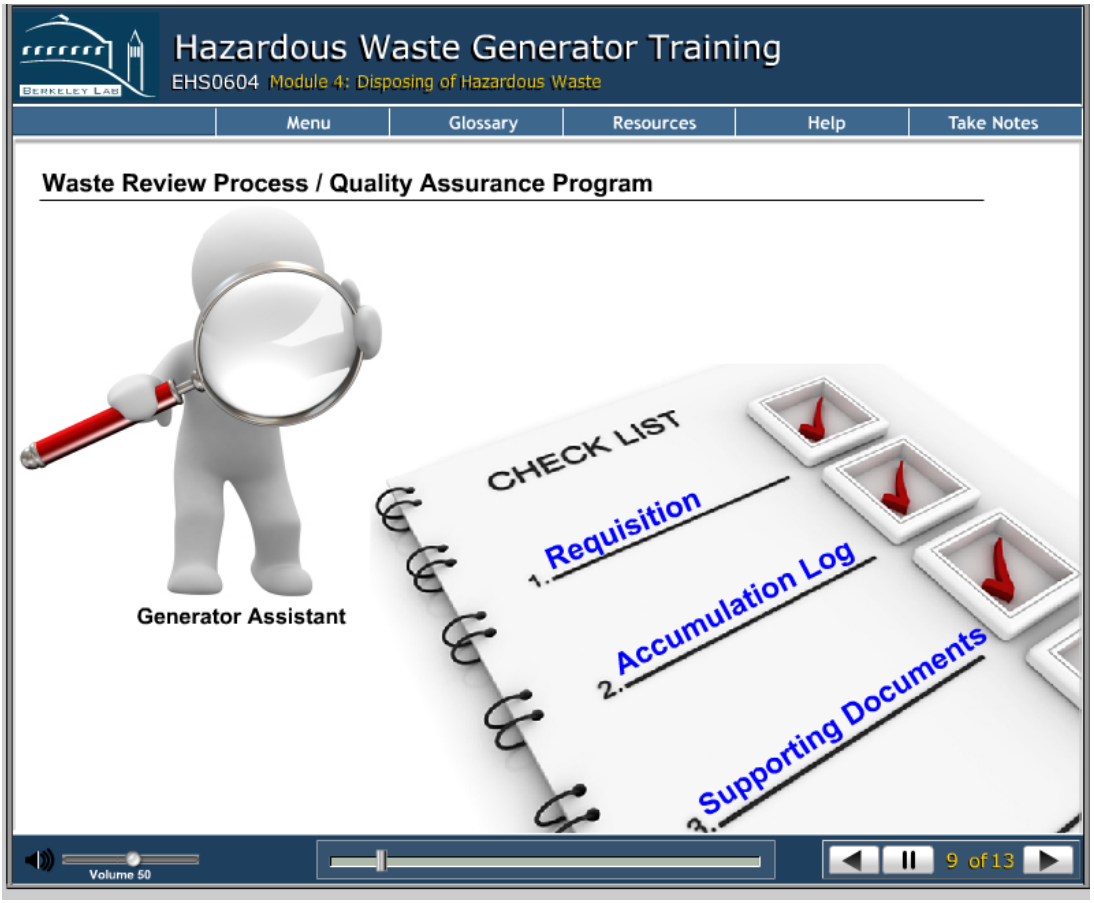


If Part A and Part B are in separate containers, bag them separately and manage each as hazardous waste in your SAA. If they are in a single unit, be sure to secure the closure in place to prevent co-mingling of the resin and hardener.



Place the unit in a bag, and manage it as hazardous waste.

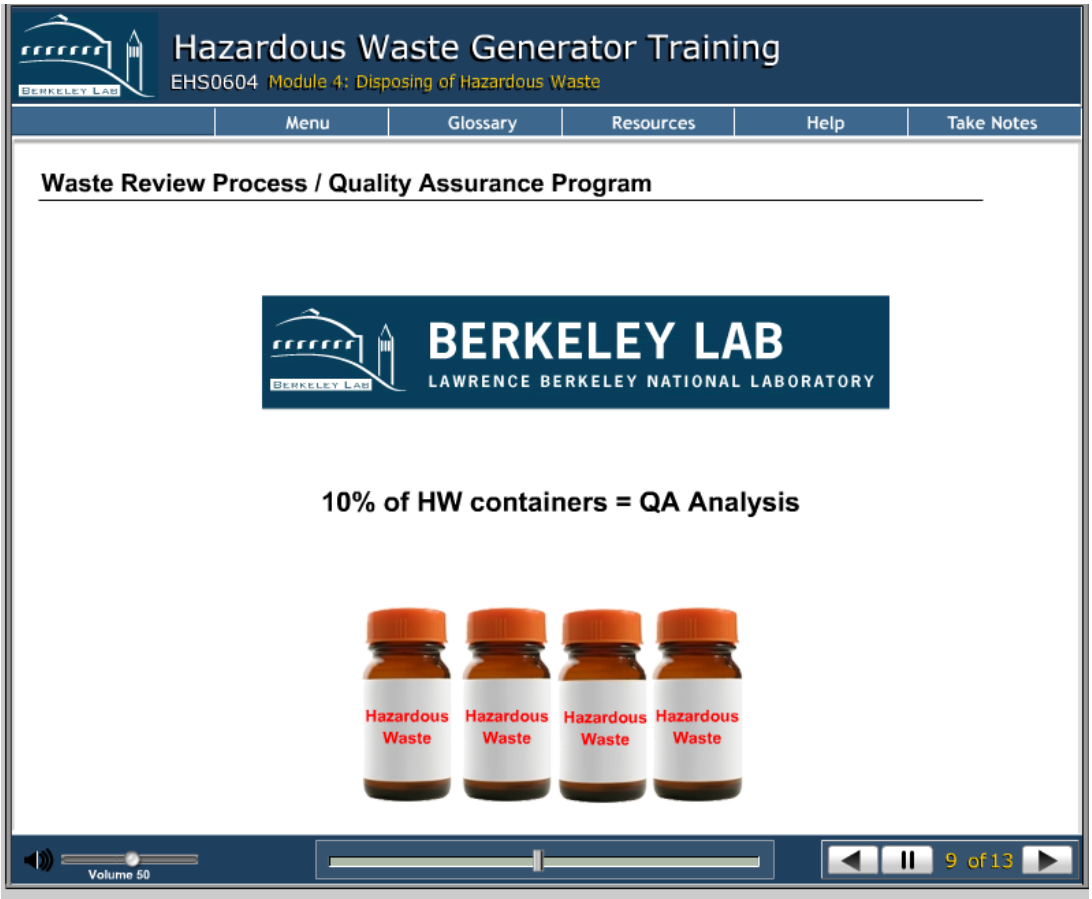
Waste Review Process / Quality Assurance Program



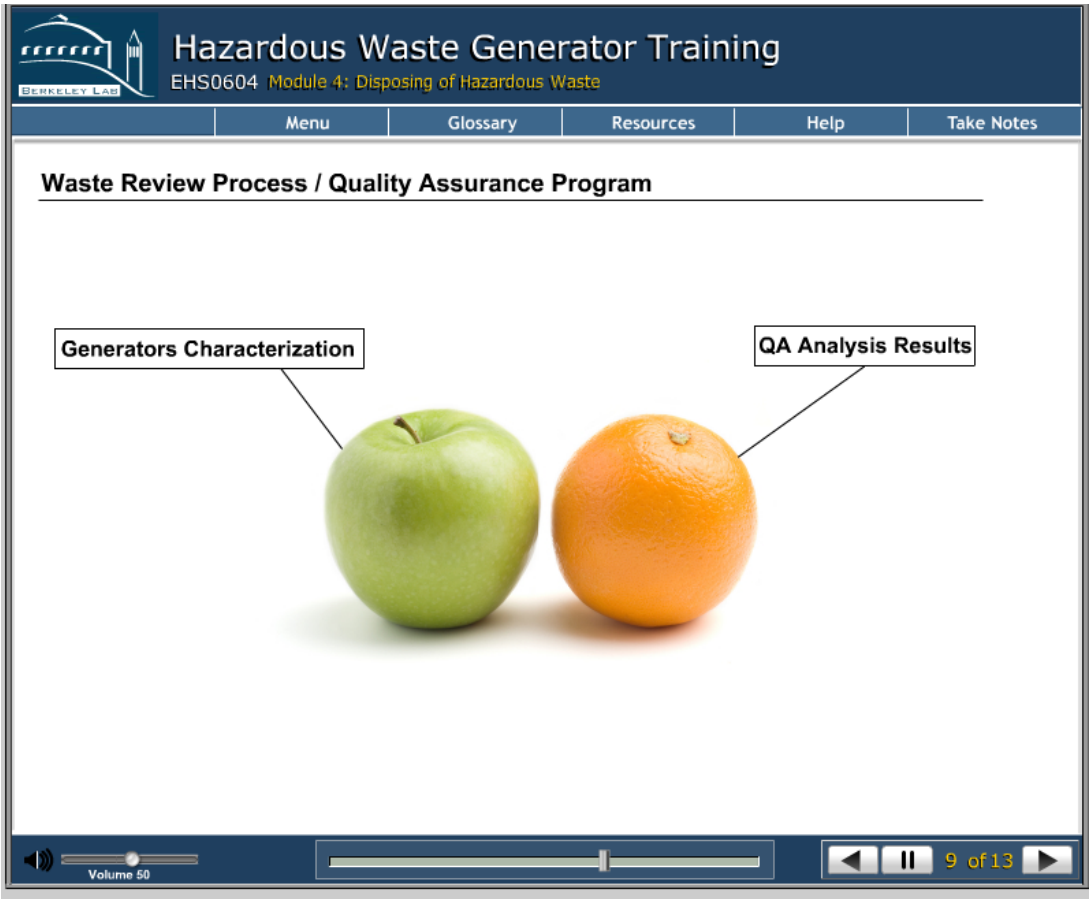
When your requisition, Accumulation Log, and supporting documentation are received by the Waste Management Group, the information you've provided will be reviewed by your generator assistant. She or he will assign the proper verification sampling, hazardous waste handling facility storage location, and waste stream based on this information. Once the review is complete, the waste pickup will be scheduled according to the pickup schedule for your building.

Each item entering the hazardous waste handling facility is subject to random verification sampling.

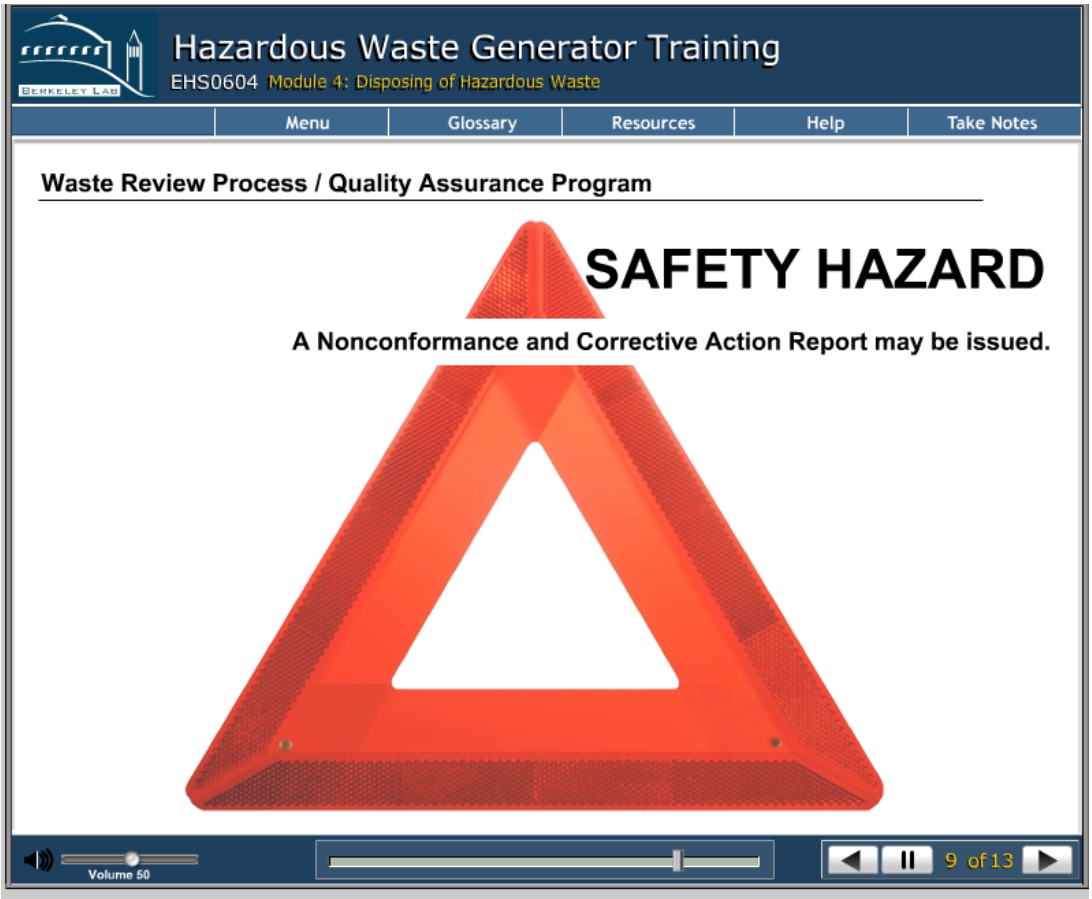
Please note that 100% of waste coming from the JGI, Potter St and JBEI are sent directly to off-site Treatment, Storage, and Disposal Facilities with no LBNL performed QA analysis or inspection so careful generator characterization from these facilities is very important.



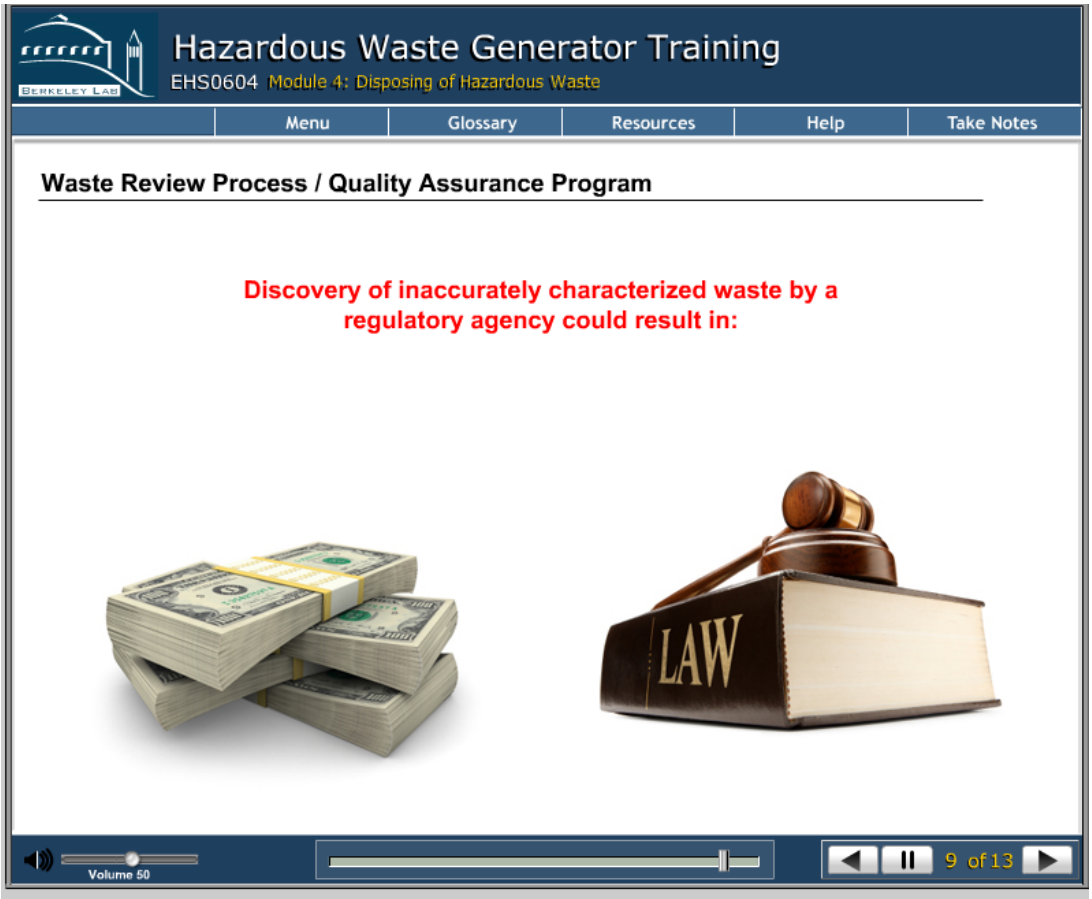
All other LBNL locations will have ten percent of their hazardous waste containers chosen for QA analysis or inspection. A computer-generated random-selection program chooses which wastes will be sampled for verification of the generators characterization.



If, on review it is determined that there is a discrepancy between the generators characterization and the analysis results, you will be contacted by your generator assistant for follow-up.

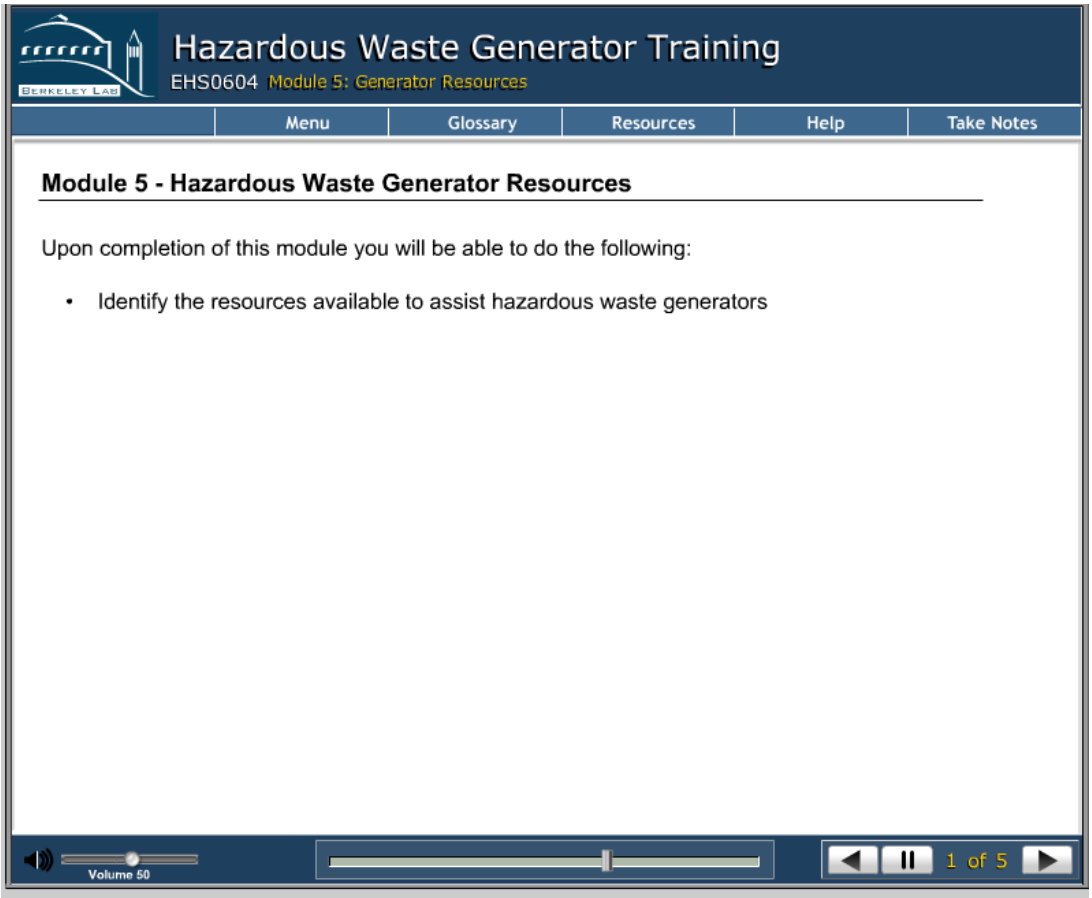


If a safety hazard exists or a potentially significant problem could be created at an off-site facility, a Nonconformance and Corrective Action Report (NCAR) may be issued. In this case it is possible that 100% analysis of the next waste shipment may be required and the analysis will be funded by the waste generator.



The discovery of inaccurately characterized waste by a regulatory agency could result in fines and/or criminal penalties for the Laboratory, and could jeopardize the operation of the Hazardous Waste Handling Facility and the specific research projects involved.

Module 5 – Hazardous Waste Generator Resources



Upon completion of this module you will be able to do the following:

- Identify the resources available to assist hazardous waste generators

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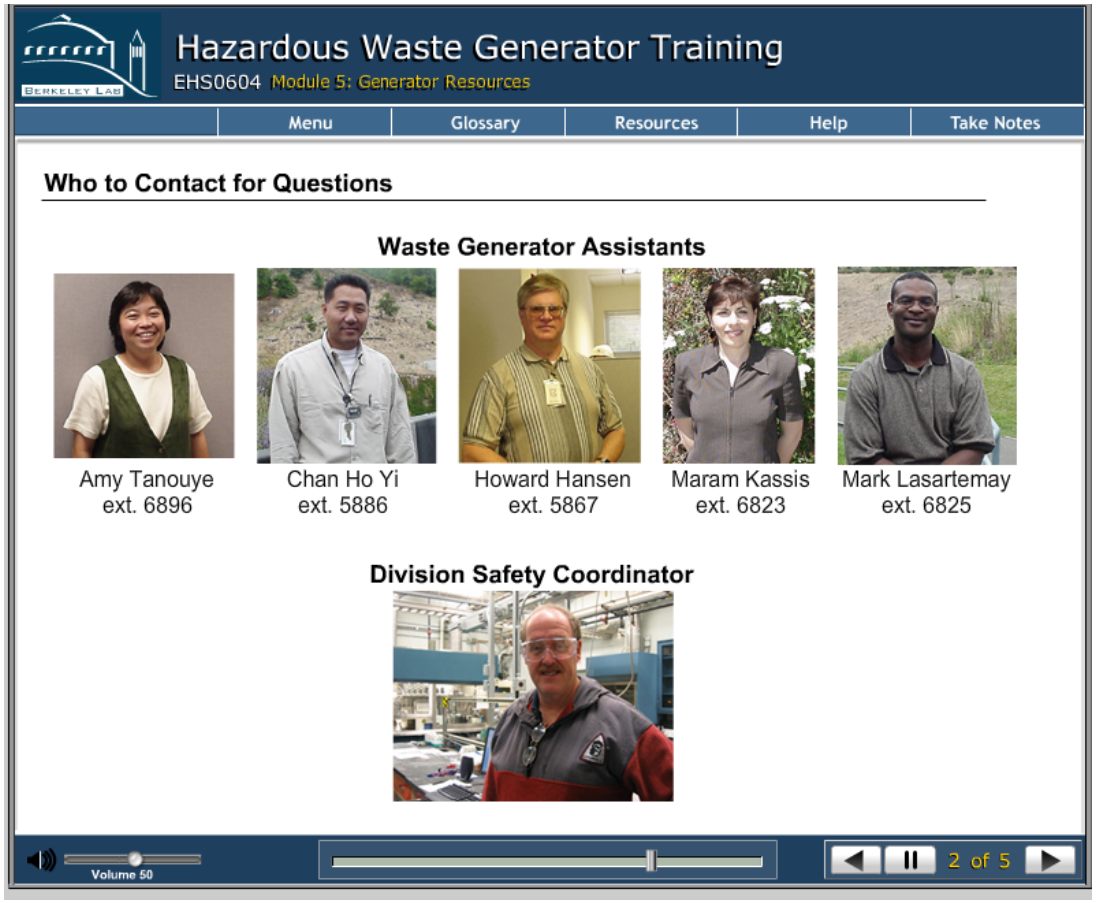
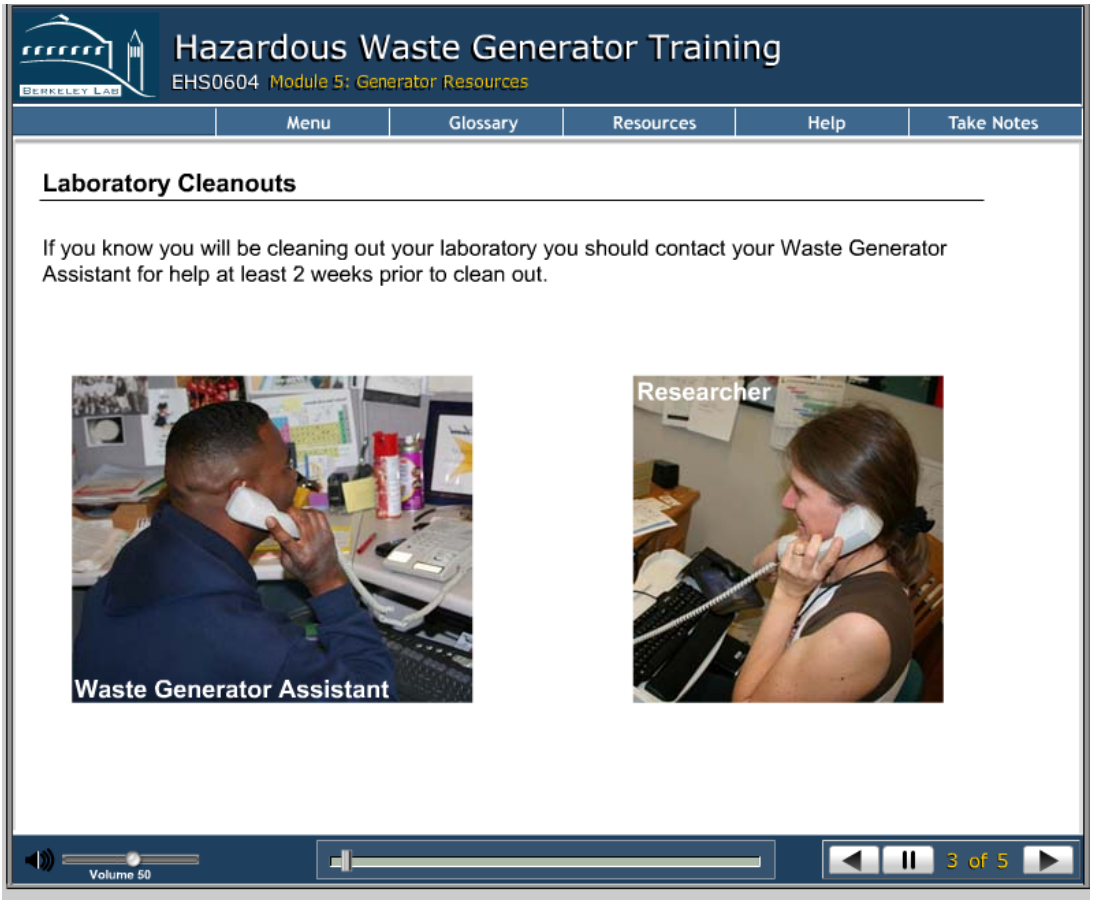
Who to contact for questions

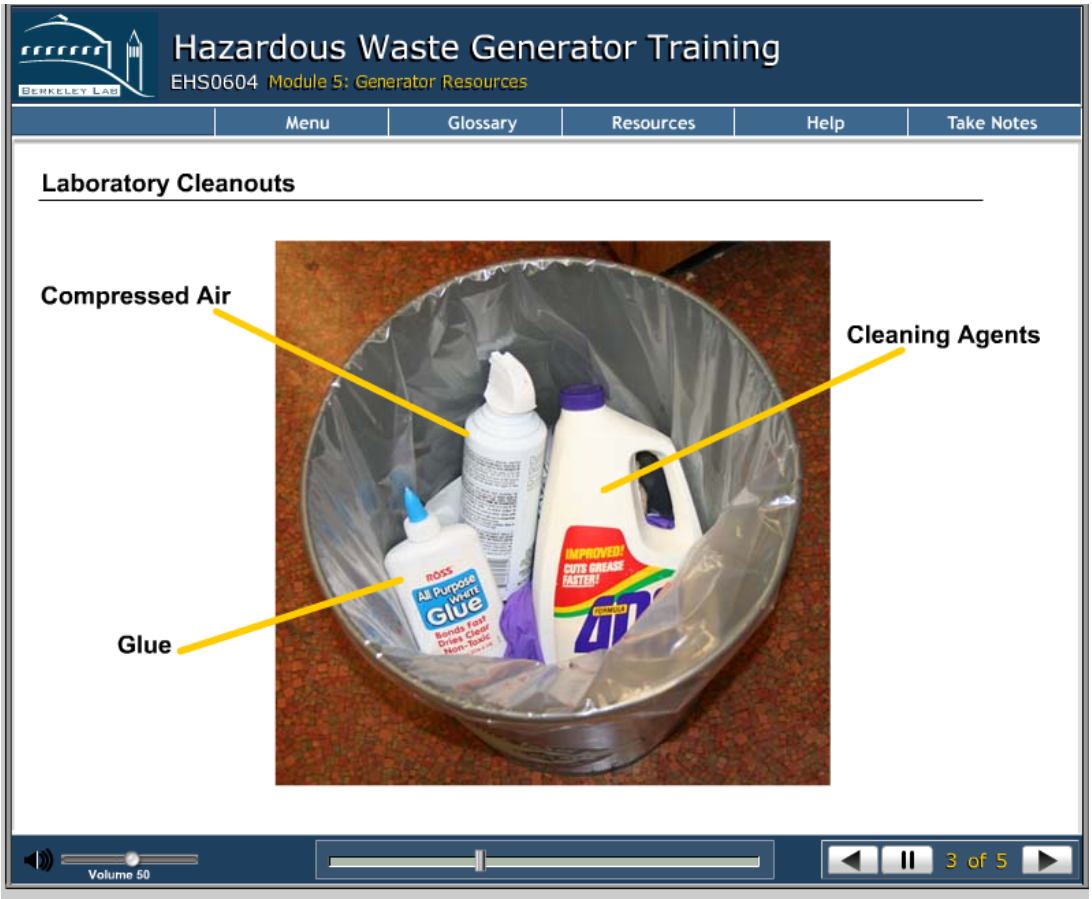


If you have questions or concerns contact your Waste Generator Assistant. You can also contact your Division Safety Coordinator.

Laboratory Cleanouts



If you know you will be cleaning out your laboratory you should contact your Waste Generator Assistant for help at least 2 weeks prior to clean out. Not doing so will create more work for you in the long run.



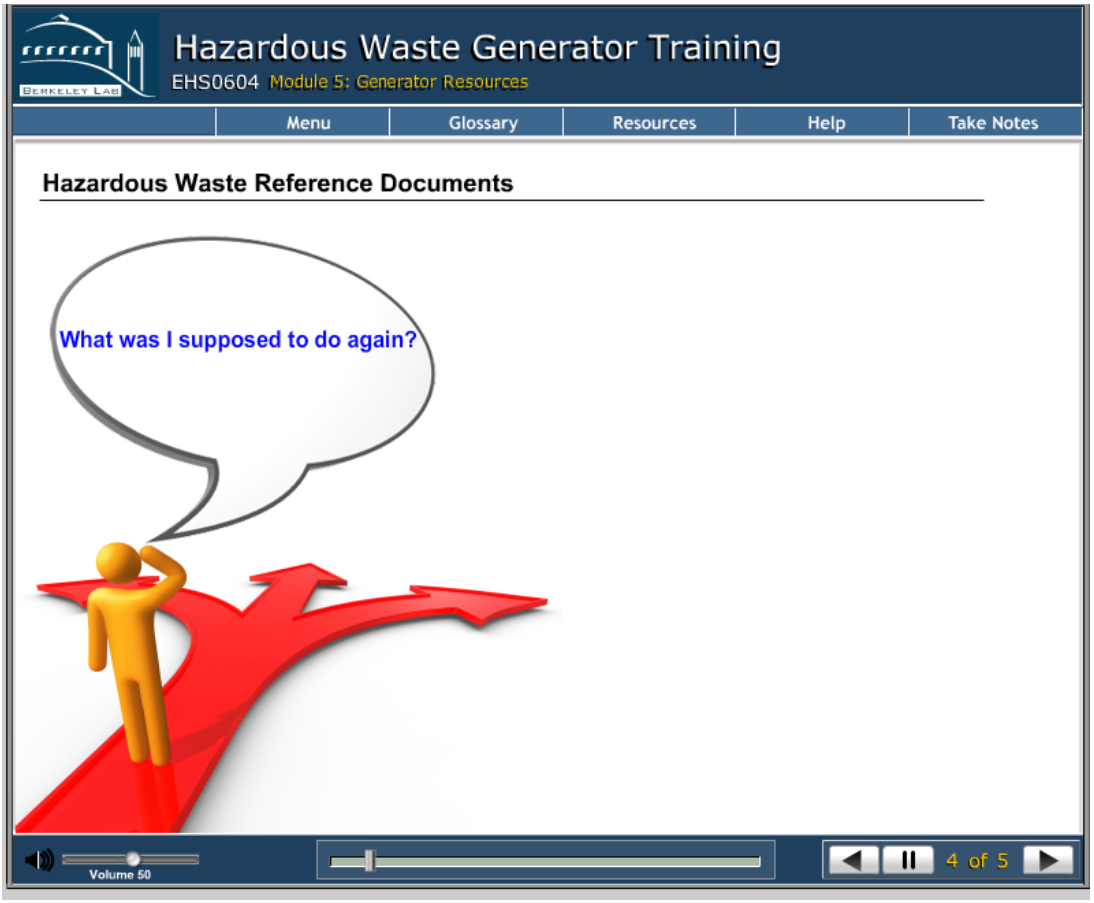
For example: Sarah who was cleaning out her laboratory thought items like small cans of compressed air, glue, and cleaning agents could be thrown away in the regular trash can.

When her Waste Generator Assistant found out she was cleaning out her laboratory the Generator Assistant went to help, only to find that a lot of items thrown away in the regular trash needed to be treated as hazardous waste.

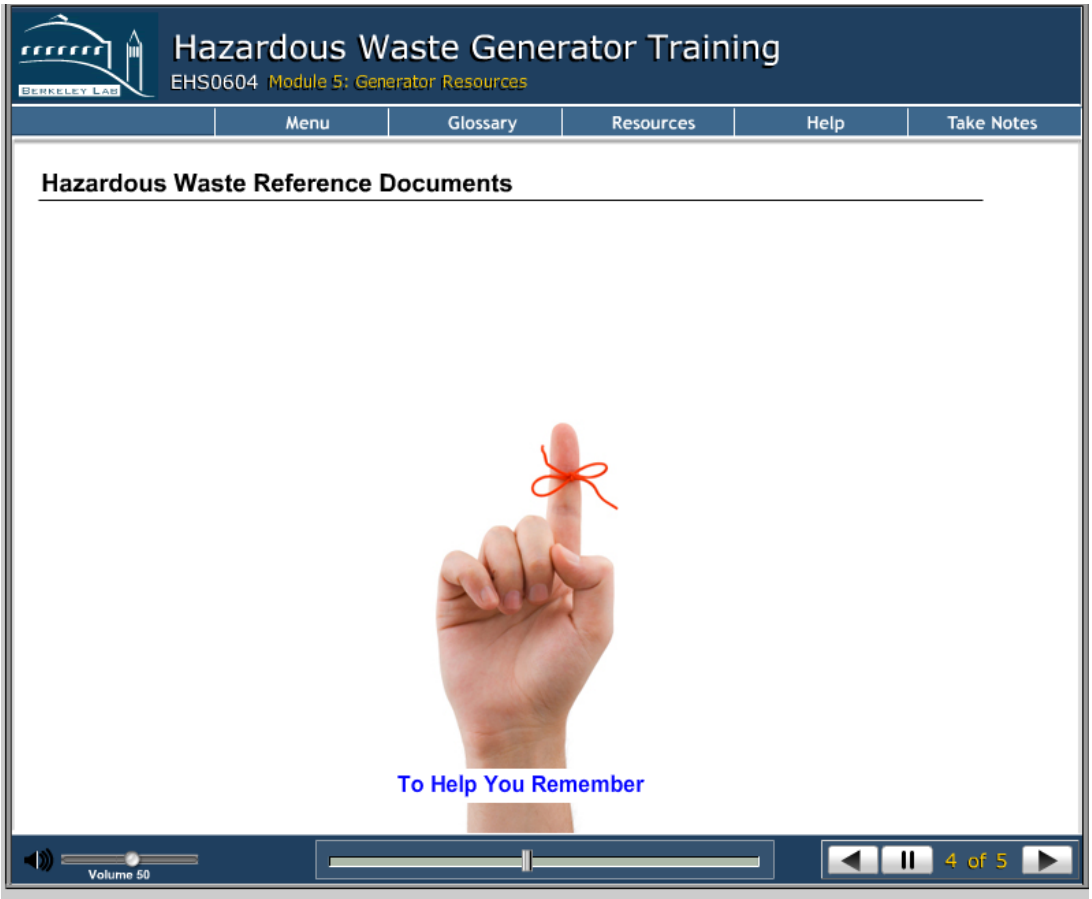
On the other hand, Sarah placed some items on a hazardous waste requisition only to be told they were not hazardous waste when the requisition was processed.

All the time spent labeling the waste, placing it in a SAA, and placing it on a requisition could have been avoided if she had talked with her Generator Assistant prior to the clean out.

Useful Hazardous Waste Resources



It's important to keep in mind that you will not remember everything mentioned in this course.



To help refresh your memory and correctly fill out hazardous waste labels, accumulations logs, and requisitions, as well as correctly characterize your waste: the following documents have been provided to you for download to reference in the future when you dispose of your hazardous waste.

- An Example Hazardous Waste Label
- An Example Accumulation Log
- Waste Requisition Instructions and
- A Waste Characterization Quick Reference

Useful Hazardous Waste Websites

There are many hazardous waste related websites that you can refer to when questions arise. Please don't hesitate to the use the following websites to help you with disposing of your hazardous waste.

Such websites include the LBNL Hazardous Waste Generator Guidelines, LBNL Waste Management Website, EH&S Website, MSDS Databases, LBNL Chemical Hygiene and Safety Plan, Hazardous Waste Forms, Hazardous Waste Supplies, and the Hazardous Waste Pick-up Schedule. Click here to download a copy of these website links to use as a reference in the future.