

EPA's Methylene Chloride Rule & Implications for Laboratories

Recent updates to the Toxic Substances Control Act regarding methylene chloride (dichloromethane) are set to enhance safety for consumers and laboratories alike. Starting May 2025, all consumer products containing methylene chloride—such as adhesives and paint strippers—will be banned to reduce public exposure. While laboratories can still use the chemical, they must comply with strict regulations that acknowledge its research utility while prioritizing safety. Laboratories planning to continue using methylene chloride must implement several key measures. Yale Environmental Health and Safety will conduct exposure monitoring, and local exhaust ventilation, such as fume hoods, will be required to mitigate inhalation risks. A comprehensive Workplace Chemical Protection Plan will be developed by EHS and shared with the relevant community. Additionally, all personnel must receive training on the hazards and safe handling practices associated with methylene chloride, and appropriate personal protective equipment (PPE) must be provided and worn.



To prepare for these changes, labs should:

1. **Evaluate Alternatives:** Labs should actively seek less hazardous substitutes for methylene chloride. This is the preferred approach to enhance safety.
2. **Compliance Preparation:** Labs should prepare to meet the new requirements by reviewing existing safety protocols and updating them as necessary.
3. **Communication:** It is essential to communicate these changes to all lab personnel, ensuring everyone is informed and prepared for the transition.
4. **What else can labs do?** Labs should review their inventories and dispose of any old or unwanted methylene chloride. All containers ready for disposal should be labeled with a completed hazardous waste tag. Arrange for pick up by submitting a [request](#) through EHS Integrator.

The EPA's updated regulations aim to protect public health and promote safer laboratory practices. Laboratories are encouraged to adapt proactively to ensure compliance and maintain a safe working environment. For further assistance, please contact your [safety advisor](#).

Keep Your Cold Storage Units Up to Date

Cold Storage Units (CSUs), including freezers, fridges, liquid nitrogen tanks for sample storage, and cold rooms, are important research assets for proper material storage in labs and clinics. If your group uses CSUs and your units have an inventory sticker as shown (right), you already have a CSU inventory in EHS Integrator. To find your **CSU inventory**, log into [EHS Integrator](#), under "Inventory," then "Cold Storage," you will see all your current CSUs listed, each one having a unique CSU ID number, with its make, model, serial number, location, and the type of materials stored inside (chemical, radioactive, infectious biologicals, etc.).

It is very important for each research/clinic group to keep your CSU inventory up to date. In case of a large power outage, such as the week-long power outage in KBT years ago, and the more recent ones in 300 George and Hunter building, EHS worked with Emergency Management and Facilities to help the labs with up-to-date CSU inventory information quickly locate and transfer affected CSUs to a safe location, thus avoiding material loss and research interruption.

Freezer Inventory Complete



CSU ID: 12345

The contents of this freezer have been reviewed.

The contents of each container and PI responsible for each container have been identified.

PI Name(s):

Date Reviewed:

Contents Reviewed By:

However, we had difficulties with units that did not have CSU inventory information or the information was outdated (owner, locations, and types of materials), resulting in delayed handling, which could have resulted in loss of research materials. An up-to-date CSU inventory is also important for the lab to comply with Yale's [High Risk Biomaterial Management Policy](#).

To add a new CSU to your inventory, go to the Cold Storage Inventory page as described above, choose "New Cold Storage Inventory," then fill out all the information under different sections, followed by "Submit". The PI then receives an email asking for "Approval" of the newly added CSU. PI, please make sure you respond to this email and print out a page with a sticker shown (above right) with an auto-generated unique CSU ID number. Tape this printout to your unit. Your safety advisor will give you a more permanent sticker to replace the printout when a lab safety survey is conducted (within a year or sooner). You can also contact your [safety advisor](#) and ask for permanent CSU stickers.

CSU Inventory Support

If you have any questions about the CSU inventory or about EHS Integrator, contact [EHS Integrator Support](#).

Please note that your **EHS safety advisor is always here to help**. For example, you can ask EHS to remove a CSU from your inventory after you dispose of it properly. However, **it is your responsibility to keep your CSU inventory up to date**.

Recent Incidents Involving Extraction Kits Containing Guanidine Compounds

When performing nucleic acid extractions using DNA and RNA extraction kits, it is crucial to understand the reagents involved to ensure safe practices in the lab. Many kits contain guanidine thiocyanate or guanidine hydrochloride, which are potent chaotropic agents found in lysis buffers. These chemicals denature proteins, disrupt cell membranes, and inactivate enzymes such as RNase and DNase, preserving the integrity of DNA and RNA. They are also highly effective at inactivating biological materials and pathogens, eliminating the need for additional disinfectants like bleach before disposal.

Despite this, there have been recent incidents where bleach (sodium hypochlorite) was mistakenly added to guanidine-containing solutions, leading to two visits to Yale Health Acute Care. In both cases, lab personnel mixed bleach with these chemicals, resulting in the release of chlorine gas. Chlorine gas is a toxic substance that can cause severe respiratory distress, including coughing, shortness of breath, chest pain, and, in high concentrations, pulmonary edema.

To prevent such incidents, it is important to recognize that guanidine thiocyanate and guanidine hydrochloride are already sufficient for deactivating pathogens prior to safe and proper disposal of extraction waste. Adding bleach is not only unnecessary, but also dangerous. Always follow the handling and disposal instructions provided by your lab and the safety information from the extraction kit's manufacturer. For detailed disposal instructions on select QIAGEN kit reagents, including which kits must be managed as chemical hazardous waste, please refer to [MANAGEMENT & DISPOSAL OF QIAGEN KIT REAGENTS](#) on the EHS website. If you cannot find your kit on the EHS website or are otherwise unsure on handling or disposal procedures, consult your [safety advisor](#) for further guidance.

Key Takeaway: Never mix bleach with solutions containing guanidine thiocyanate or guanidine hydrochloride. This combination produces dangerous chlorine gas, posing serious health and safety risks. Let's learn from these recent incidents- Always prioritize your safety and the safety of others in the lab!

Yale Green Labs Enters Program for Circular Economy of Lab Plastics

[Yale Green Labs](#) is excited to announce a pilot program with Polycarbin, a company which focuses on recycling and remanufacturing of lab plastics. This pilot program will enable the Yale community to take part in a circular economy, which was built by Polycarbin and takes recycled pipette tip boxes and remanufactures them into lab plastics. The initial phase of the program will only accept clean pipette tip boxes. The Polycarbin pipette tip box recycling bins are now located in the Bass, Medical School, and West Campus stockrooms. Based on participation and feedback, Green Labs will assess the feasibility of expanding the program to include other lab materials.

PICTURE IT: EHS ON CAMPUS

Yale EHS staff has been busy spreading its safety message at various events around campus. Pictured below are EHS taking part in the Employee Health & Well-Being Fair at the Schwarzman Center, Chemistry Safety Day at Sterling Chemistry Laboratory, the Yale University Vendor Expo, sponsored by Yale Procurement and Scientist Solutions, held at the Medical School, Science Hill, and West Campus, and organizing a hurricane preparedness drill at West Campus with partners from around Yale and the City of New Haven.

