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EPA's 2024 Final Rule on Methylene Chloride: What It Means for Academic Institutions

Joe Whitlock, PhD, CIH, CSP, CHMM, CRMA
EHS Executive Director

Rachael Weiderman MPH, MHA, MS, RBP(ABSA), MLS(ASCP)
Research and Lab Safety Manager

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Objectives

- Provide a clear understanding of the EPA's 2024 Final Rule on methylene chloride.
- Explain its relevance to academic research and laboratory operations.
- Detail the requirements and deadlines for compliance.
- Offer guidance on risk mitigation and alternative solutions.

Methylene Chloride

- **Chemical Name**: Dichloromethane (DCM)
- **Uses**: Solvent in paint stripping, adhesives, pharmaceutical manufacturing, and academic lab procedures (e.g., extraction, chromatography).
- **Hazards**:
  - Acute toxicity via inhalation and dermal exposure.
  - CNS depressant effects: dizziness, unconsciousness, death.
  - Probable human carcinogen

Regulatory Background

- Governed under the Toxic Substances Control Act (TSCA).
- 2019: EPA bans methylene chloride in consumer paint removers.
- 2020: Final risk evaluation finds "unreasonable risk to human health."
- 2022: Risk determination reaffirmed without considering PPE as sufficient protection.
- 2024: EPA finalizes rule restricting nearly all industrial and commercial uses.

EPA Methylene Chloride Final Rule

- **Finalized**: April 2024
- **Published**: May 2024
- **Core Intent**: Eliminate risks to human health from methylene chloride use.
- **Scope**:
  - Most commercial and industrial uses phased out.
  - Exemptions only for essential uses with strict controls.

Key Provisions of the Rule

- **Ban Timeline**:
  - Most uses phased out within 1 year of rule publication.
  - 2-year phase-out for critical aerospace and military uses.
- **Prohibited Uses**:
  - Paint stripping, degreasing, adhesive production, chemical synthesis.
- **Exemptions**:
  - Essential laboratory and research uses (conditional).

Research Exemption

- Allows continued use in “critical or essential laboratory research.”
- Applies to:
  - Academic institutions
  - Government research facilities
  - Industrial R&D labs
- Use must be:
  - Technically justified
  - Lacking safer feasible alternatives

Research Exemption Requirements

- Written **Workplace Chemical Protection Plan (WCPP)** required.
- **Engineering Controls**:
  - Fume hoods
  - Ventilated enclosures
- **PPE**:
  - Chemically resistant gloves (e.g., SilverShield®, butyl rubber)
    - No nitrile or disposable latex/rubber
  - Eye protection

Exposure Monitoring

- **Monitoring:**
  - Initial and periodic air sampling
  - Must comply with EPA rule exposure limits (more strict than OSHA PELs)
  - EPA Action Level 1 ppm
- **Supplied-air respirators (SARs)** required when airborne concentrations exceed:
    - 2 ppm (8-hour TWA exposure limit per EPA rule)
    - 16 ppm (15-minute peak exposure limit)

Training

- Annual EHS and Lab-specific training required for research exemption:
  - hazards, controls, emergency response

Implications for Academic Institutions

- All methylene chloride use must be documented and justified.
- Purchase restrictions will be implemented.
- EHS oversight is required for:
  - Approval of use
  - Monitoring compliance
- Labs must either:
  - Transition to alternatives
  - Apply for and meet exemption conditions

Timeline and Compliance Deadlines

- The EPA has proposed extending certain compliance deadlines for non-federal laboratories to align with those for federal laboratories and their contractors. This proposal, issued on May 20, 2025, aims to provide additional time for these labs to implement the required safety measures.

EPA Proposes Temporary Relief to Ensure Lab Compliance with Methylene Chloride Regulations under TSCA

Released May 20, 2025

The U.S. Environmental Protection Agency (EPA) is proposing to extend various upcoming compliance dates in the final risk management rule for methylene chloride under the Toxic Substances Control Act (TSCA) in order to ensure long-term compliance with the rule's requirements. The proposal extends the Workplace Chemical Protection Program (WCPP) compliance dates for non-federal laboratories by an additional 18 months, to align with the dates allowed for federal laboratories and their contractors. EPA is issuing this proposal to address non-federal laboratories' near-term challenges with implementation of the May 2024 final rule on methylene chloride.

If finalized, this proposal would extend the following compliance dates for non-federal laboratories: for initial monitoring from May 5, 2025, to November 9, 2026; for establishing regulated areas and ensuring compliance with the Existing Chemical Exposure Limit from August 1, 2025, to February 8, 2027; and for ensuring the methods of compliance as well as developing and implementing an exposure control plan from October 30, 2025, to May 10, 2027.

Shortly after publishing the 2024 final rule, representatives from various laboratories using methylene chloride contacted EPA with questions and concerns including on the applicability of the rule and the requirements for WCPP compliance. Many of these laboratories, especially those associated with local governments or universities on fixed budget cycles that did not contemplate these requirements, use methylene chloride in small quantities and somewhat infrequently and are facing challenges completing the rule's initial monitoring requirements across potentially hundreds of labs in such a short timeframe. EPA's proposal would avoid disrupting important environmental monitoring and associated activities, while these non-federal labs work to comply with the rule's new requirements.

EPA will soon publish a Federal Register notice extending the compliance dates for non-federal laboratories. Upon publication of the Federal Register notice, EPA will accept comments for 30 days via docket EPA-HQ-OPPT-2020-0465 on regulations.gov.

While we are proposing new compliance dates through this action, the current deadlines remain effective until modified through this rulemaking. Enforcement of the current deadlines is a low enforcement priority for the agency, and EPA intends to focus its resources on compliance with the new compliance dates that may be established by this rulemaking. EPA retains the right to take action to address imminent and substantial threats necessary to human health and the environment.

Read a pre-publication version of the proposed rule.

Compliance Requirement	Original Deadline	Proposed Extended Deadline
Rule Effective Date	July 8, 2024	N/A
Consumer Use Phase-Out	July 8, 2025	N/A
Industrial/Commercial Use Phase-Out	July 8, 2026	N/A
Initial Exposure Monitoring (Non-Federal Labs)	May 5, 2025	November 9, 2026
Regulated Areas & Exposure Limit Compliance	August 1, 2025	February 8, 2027
Exposure Control Plan Implementation	October 30, 2025	May 10, 2027

K-State EHS Efforts and Support

* We are closely monitoring the EPA DCM Updates *

In Progress:

- Benchmark K-State Peer and Aspirational Institutions, national and international safety organizations
- Communication with state regulatory agencies – Completed/ Ongoing
- Inventory all uses and locations of Methylene Chloride – Due June 30, 2025
- Restrict methylene chloride procurement without approved justification – Immediately
- Develop DCM website - Completed
- Develop and approve WCPP templates – Completed template
- Encourage all users to check PPE compatibility - Immediately

Next Steps:

- Conduct training sessions and air monitoring
  - Respiratory protection program enrollment, if applicable
- Departments/Labs that elect to retain DCM create WCPP from the template
- Regulated Area Demarcation (signage, labelling, etc.)

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Our Commitment

- EH&S is committed to supporting academic research through proactive safety management.
- As the DCM regulatory landscape is rapidly changing, we are making preparations for campus-wide adherence to the regulatory requirements while also respecting ongoing research and laboratory activities.
- Our goal: Transparent and up-to-date information to ensure a culture of safety in all research and teaching labs.

Immediate Lab Next Steps

- All purchases or transfers of DCM must be approved by EHS immediately
- Inventory DCM – storage locations, quantities, and all uses
- Consider elimination and substitution where possible to prepare for potential restrictions under new regs – Where is DCM necessary to achieve goals?
- Identify fume hoods that operate consistently in alignment with manufacturer requirements for DCM use (EHS can help)
- Conduct lab and procedure-specific training, communicating hazards and controls for all chemicals
  - Reinforce consistent and appropriate use of PPE
  - Check chemical compatibility for all PPE
- Ensure chemical inventories and SDSs are up-to-date

Thank you!

- Your partnership in research and lab safety is valuable and commended.

Rachael M. Weiderman

warhurst@ksu.edu

785-493-1127

139 Dykstra Hall

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- EPA Methylene Chloride Overview
- Lab Safety Institute Methylene Chloride Webinar Series
- Methylene Chloride (DCM) Replacements
- OSHA Methylene Chloride Standard: 29 CFR 1910.1052
- ACS Green Chemistry Tools: https://www.acs.org