

Department of Public Health

Environmental Health Section



Use of Lead-Containing Ceramic Glazes in Contemporary Ceramic Studios

Product Advisory and Information Sheet

Introduction

With the development of glazes that can be painted on to pre-fired ceramic forms (bisque-ware), a new type of ceramic activity has become possible. Novices, including children, using non-toxic glazes and acrylic paints, can decorate the bisque-ware. Contemporary ceramics studios may offer an array of ceramic pieces and decorative colors, a pleasant atmosphere and frequently, snacks and drinks for customers. They are very popular locations for children's birthday parties and other gatherings.

In contemporary ceramics studios, customers decorate the bisque-ware with either non-toxic glazes or acrylic paints. Glazed articles are then covered with a dipping glaze (overglaze) and fired again to vitrify the glazes. Studio personnel conduct these potentially hazardous operations of dipping and firing. The dipping glaze may contain a lead silicate frit. When the pieces are dipped drips that contain lead can fall to the work surface or floor and dry. The resulting lead-containing dust can be tracked throughout the studio. Additionally, lead-containing dust may accumulate in high concentrations and be distributed throughout the studio by an existing heating, ventilation, or air conditioning system. Food and drinks are often available for studio clientele, presenting a potential for ingestion of lead from contaminated hands or serving or eating surfaces.

Background

An epidemiological investigation of a lead poisoned child conducted by Connecticut local health officials resulted in the identification of a Contemporary Ceramic Studio/Hobby Shop as the primary source of the child's lead exposure through ingestion and inhalation of dust from lead-containing glazes. During the course of the investigation, it was noted that the child spent a considerable amount of time each day with the owner at the studio. Initial dust wipe sample results revealed elevated concentrations ranging from 77 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) at the entrance of the studio to 233,000 $\mu\text{g}/\text{ft}^2$ at the shelf next to the glazing area. All dust wipe results exceeded the US Environmental Protection Agency's (EPA) and Connecticut Department of Public Health's (DPH) health-based risk assessment standard of 40 $\mu\text{g}/\text{ft}^2$. Lead-containing glaze, which had been identified during the initial inspection, was used by the present and previous shop owners.

Product Advisory

The Connecticut DPH is advising business owners of contemporary ceramic studios/hobby shops to inventory all ceramic glazes and frits for the potentially harmful element of lead. Such products pose a risk of lead exposure for children, adults, and workers.

Lead-containing ceramic glazes can pose a health risk, especially to children and women of childbearing age, as well as to developing fetuses.

Lead exposure can cause adverse health effects including, but not limited to, damage to the brain and nervous systems, lowered IQ, behavior and learning problems, headaches, reproductive problems in men and women, high blood pressure, digestive problems, nerve disorders, memory and concentration problems, and muscle and joint pain.

It is important to review any ceramic glaze materials that are presently in use (and to the extent possible, those that were used in the past) to determine whether lead-containing glazes are or have been used, and if lead hazards may have been created.

It is the position of the Connecticut DPH that only non-lead-glazed and frits should be used in Contemporary Ceramic/ Hobby studios in Connecticut. We strongly discourage the use of lead-containing glazes by individuals who may not be able to read or understand the manufacturer's safety instructions, or by women who are pregnant or may become pregnant.

If it is determined that lead-containing materials are currently or have been used in the past in any contemporary ceramics studio or hobby shop, the following actions are recommended:

- Stop using the materials immediately, and safely dispose of those materials as hazardous waste.
- It is not possible to know what level of hazard, if any, was created. As a precautionary step, it would be prudent to stop the use of and restrict access to all areas where ceramic/pottery operations were conducted in conjunction with lead-containing glazes, including glaze storage areas, kilns, and ventilation systems, until further evaluation is conducted.
- A DPH Licensed Lead Consultant Contractor should be contacted. The Consultant Contractor will assign a DPH Certified Lead Inspector Risk Assessor (LIRA) who will review the overall situation with the local health department (LHD), assess the level of risk, conduct sampling for dust lead hazards as warranted¹, and develop a site specific clean-up plan for the facility. A copy of the plan should be submitted to the LHD. The plan should include:
 - A review of the historic and/or current use of lead-containing products focusing on specific areas of concern. Any existing lead-containing glazes will be disposed of safely in accordance with all applicable laws and regulations.
 - Documentation of the layout of all rooms, areas, and surfaces where samples have been collected. Equipment and storage areas, as well as ventilation and exhaust systems should be included in the risk assessment.
 - A determination of what areas are to be cleaned (including kilns). Cleaning will be done using wet cleaning and HEPA vacuuming techniques that are specific for cleaning lead contaminated facilities.
 - A review of potentially contaminated items that may not be able to be effectively cleaned. The LHD should determine whether the items may be cleaned or should be discarded
- Cleaning will be followed by clearance testing that is conducted by a DPH Certified Lead Inspector (LI), LIRA, or by trained LHD staff. Clearance testing is to include visual inspection and dust wipe sampling in all areas. Use of affected areas and surfaces will not occur until cleared for reoccupancy. Lead in dust clearance criteria as listed in the CT Lead Poisoning Prevention and Control Regulations Section 19a-111-3(j) should be utilized. It is recommended that the most stringent clearance

¹ As an alternative, areas where there is a probability of lead contamination may be cleaned without prior sampling using wet cleaning and HEPA vacuuming techniques that are specific for cleaning lead contaminated facilities. Such cleaning shall be followed by clearance testing as described herein.

standard (40 µg/ft²) be used for any surface that is tested for which no specific standard exists.

- If lead-containing glazes have been fired in the past, kiln brick may have absorbed lead and this lead could be deposited during subsequent firings. In such circumstances any other pottery that has been fired in the same kiln should be considered to be contaminated with lead and potentially harmful unless proven otherwise by lead testing. In such cases, or when lead-containing glaze has been used on pottery, parents should be notified that such pottery should not be handled by children and should be considered unsafe for food storage. Remember that people may use art creations for purposes other than intended. They may drink or eat out of products that are not intended for that purpose. As mentioned above, the kiln should be included as an area of concern when the lead consultant designs a clean-up project. If your kiln was contaminated, consult with the manufacturer of the kiln to determine how best to clean it. In certain situations, replacement may be advisable.
- In the future, order, stock, and use only those glaze products that are labeled as “Non-hazardous”, and “Conforms to ASTM D-4236”. Such labeling confirms that the product has been tested and appropriately labeled for acute and chronic health hazards. Carefully review the descriptions of any products that you purchase from ceramics resource catalogs to ensure they are labeled lead-free.
- Products should never be removed from their original container and stored in another container because important health and safety information will be lost.
- The Art and Creative Materials Institute, Inc. (ACMI) is a non-profit association of manufacturer’s of art, craft, and other creative materials. ACMI sponsors a certification program for art materials that includes toxicological assessment of products in the certification program. ACMI certifies that products meet voluntary standards of quality and performance and that health warning labels are affixed where appropriate. ACMI’s toxicologist recommends that lead-containing hobby glazes be used only by individuals who are capable of following safe use instructions. If supervision is required, only lead-free, non-toxic hobby glazes should be used. Art products that have been evaluated by the ACMI for content of toxic materials are labeled with the following seals:



Products bearing the AP Approved product seal of the Art and Creative Materials Institute, Inc. contain no materials in sufficient quantities to be toxic or injurious to humans or to cause acute or chronic health problems. In addition, there is no physical hazard as defined within 29 CFR Part 1910.1200 (c).



Products bearing the CL Health Label (Cautions Required) seal of the Art and Creative Materials Institute, Inc. are certified to be properly labeled according to the chronic hazard labeling standard, ASTM D-4236 and the U.S. Labeling of Hazardous Art Materials Act (LHAMA). **[Note: These products lack the “no physical hazard” qualification.]**

Please Note: The AP label on an art product indicates that the product contains no materials in sufficient quantities to be toxic or injurious to humans or to cause acute or chronic health problems.

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Lead-free glazes and non lead-containing frits have been developed for use in institutions and by consumers such as children who need a glaze that requires no extraordinary health and safety precautions during handling and use.

If lead-containing glaze or other lead-containing supplies are used in your studio or hobby shop, owners are required to abide by the OSHA Lead Standard (29 CFR 1910.1025) and the OSHA Hazard Communication Standard (29 CFR 1910.1200) regarding worker safety and protection. These standards include requirements to perform initial air and dust monitoring, and the possible implementation of extensive safety precautions, blood lead testing and monitoring of workers, installation of special ventilation systems, and a formal documented staff training program regarding the hazards of using lead on the job and precautions that must be taken. Please contact the Connecticut Department of Labor at (860) 263-6900 to ensure that your facility is in compliance with these laws.

You may contact staff of the Environmental & Occupational Health Assessment Program at (860) 509-7740 if you have questions about the health effects of lead. If you have any questions regarding this information sheet, please contact the Lead Poisoning Prevention and Control Program at (860) 509-7299.