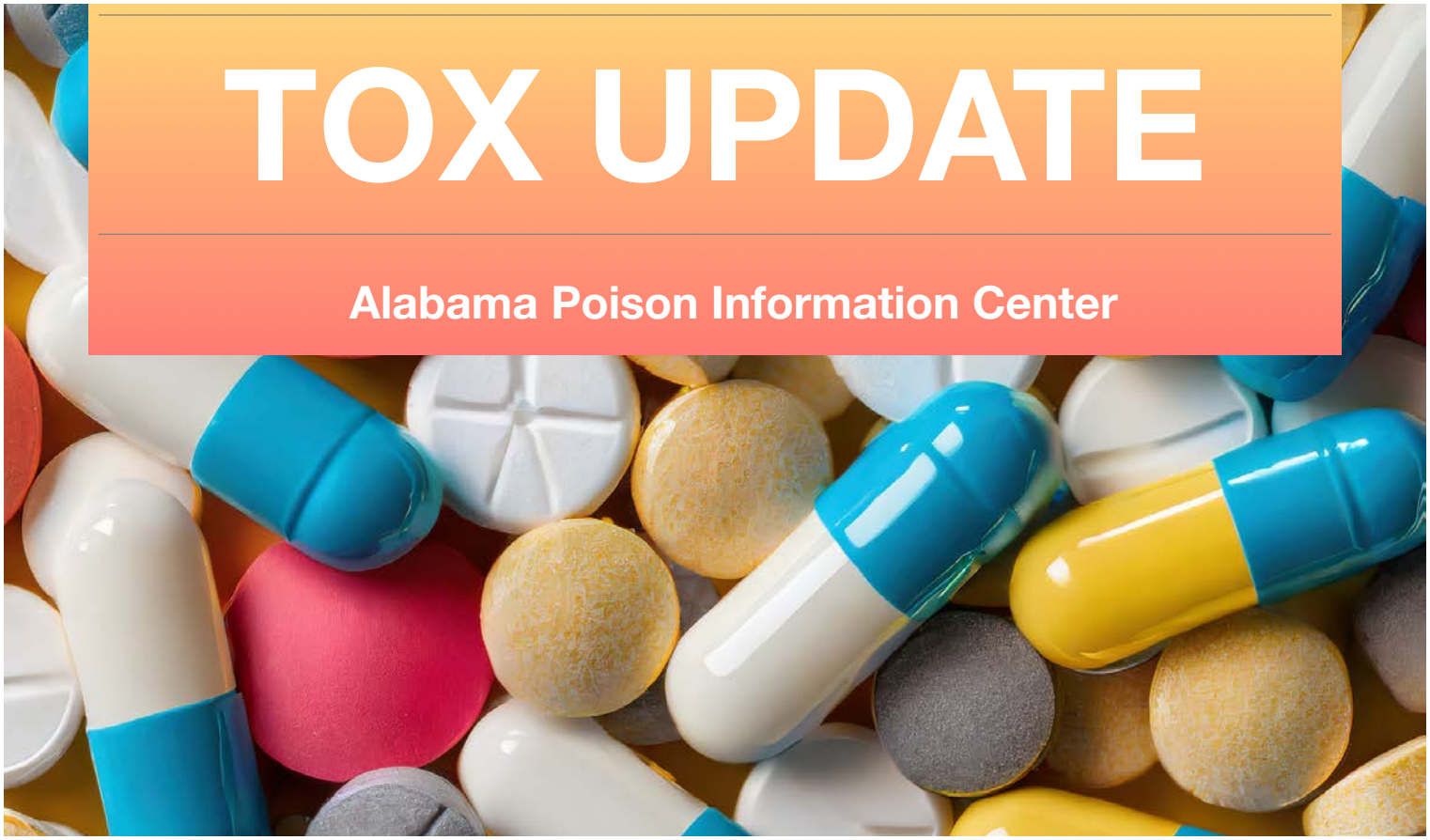
TOX UPDATE

Alabama Poison Information Center



Letter from the Alabama Poison Information Center

As the long days of summer give way to crisp mornings and changing leaves, our routines shift indoors. Fall often brings a burst of productivity—organizing the house, tackling craft projects, and stocking up for the months ahead. It also means students are back in school, homework is spread across kitchen tables, and families are busier than ever. These seasonal transitions make now the perfect time to revisit home safety and talk about the kinds of hazards that can appear in unexpected places.

[America's Poison Centers 'Daycare and School Safety' Links]

ALABAMA POISON INFORMATION CENTER
800-222-1222

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Back to School Blues: Classroom Hazards

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As temperatures start to cool, that means it's back to school for kids and teens, and a good time to review some potential classroom perils. Whether learning blackboard arithmetic, disinfecting for the flu, or starting a new arts and crafts project, children have access to a number of substances, both inside and out of the classroom, which may be harmful to ingest or use in ways other than directed.

While accidental school exposures can be alarming for everyone involved, healthcare providers can play a major role in counseling and educating both parents and teachers alike on the best strategies to minimize risks and handle unexpected situations. Listed below are some of the most common school exposures, the risks involved, and how to contact the local poison information center for 24/7/365 expert guidance.

Cleaning Products and Hand Sanitizers

Cleaning products are the #1 exposure in pediatrics both in Alabama and across the country.[1,2] From disinfecting wipes to custodian-grade sanitizers, children are at risk for exploratory ingestions and dermal exposures in and out of the classroom. While many cleaning products, such as household bleach, are little more than mild irritants, concentrated products or large and prolonged exposures may have more corrosive and dangerous effects, warranting immediate emergency room referral for potential endoscopic evaluation or burn care. In the event of an ocular exposure, school faculty should be familiar with the location of the closest eye wash station or tap water sink for prompt eye irrigation, prior to potential healthcare referral.

Furthermore, cleaning products which contain alcohol solvents or disinfectants with isopropyl alcohol pose risks of intoxication, CNS depression, and respiratory depression when ingested. Ethyl alcohol, or ethanol, based hand sanitizers, which are ubiquitous in school rooms, pose similar risks. Small children are especially susceptible to hypoglycemia following acute ethanol ingestions, and should be monitored for signs and symptoms of hypoglycemia following exposure. Additionally, green isopropyl alcohol products may be formulated with oil of wintergreen, otherwise known as methyl salicylate. As a potent salicylate, children are at increased risk of salicylate toxicity from such products. Other cleaning products may contain various essential oils as well, thus adding to the toxic profiles of these products and increasing risk of gastrointestinal upset and CNS depression.

Specialists at the Alabama Poison Information Center are trained to recognize and triage exposures which are only mildly irritating from those that are higher risk and warrant more immediate evaluation, as well as identify products which may have more unique concerns, such as with green rubbing alcohols and essential oils. Parents and teachers should be counseled on the potential dangers of these products, proper storage around young children, and how to contact their local poison center in the event of a potentially harmful exposure.

Arts and Crafts

Perhaps one of the more hands-on parts of the school day, art classes and craft rooms are filled with colorful supplies and eye-catching pigments. While most school-place products are safe and non-toxic, teachers and parents should still be aware of the potential dangers and safest products to look for.

School room suppliers may be counseled to purchase products with the AP (Approved Product) seal from the ACMI (Art and Creative Materials Institute). This certifies products as non-toxic and safe for children in the 6th grade and younger. Most children's paints, crayons, and school glues are non-toxic and may be found with this seal. Products which contain the CL (Cautionary Labeling) seal from the ACMI are not recommended for use in children in grades 6 or lower due to potential for harm with improper use, such as ingestion of the product. Products with this seal may include spray paints, certain inks, and glazes.[3,4]

While most classroom art supplies are non-toxic, it is important to remember that many products, such as crayons and chalk, may pose a choking hazard. Parents and teachers should be counseled not to leave small children alone with potential foreign body ingestions, even if labeled as non-toxic materials. Also under the category of foreign bodies are pencil lead and erasers. Although commonly mistaken as containing elemental lead, pencil "lead" today is composed of graphite, which is non-toxic, but can still pose a choking hazard or infection risk if used to puncture the skin. Similarly, erasers do not pose any systemic risk, but can be a choking hazard.

Chemistry Class Corrosives

While typical high-school science class experiments are performed with appropriate PPE and under careful supervision, accidents can still happen. The National Institute for Occupational Safety and Health (NIOSH) first published the safety guide School Science Laboratories: A Guide to Some Hazardous Substances in 1984. This guide highlights the importance of safety in the classroom, and helps to identify materials which may be appropriate for classroom use, proper storage and handling of these materials, and how to prevent and minimize harmful exposures. Substances are categorized into those with greater hazardous nature than educational utility and those with a hazardous nature but potential education utility. Products included on the latter list include a combination of irritant and corrosive materials, as well as oxidizers and known carcinogens.[5]

In the event of a chemical spill or exposure, material safety data sheets (MSDS) are also key resources which provide information on potential toxicities and initial first aid measures for chemicals. Common themes throughout these MSDS are the importance of decontamination and removal from the exposure. In the event of an ocular or dermal exposure, eye wash stations and sources of running water should be easily accessible for irrigation of the affected area. Inspection and testing of these stations should be done regularly. In the event of such exposures, the MSDS and poison centers should be consulted for guidance on the management of the unique toxicities of individual products.

Medication Misadventures

Young children may not always realize the difference between medications for taking and candy for sharing. Parents should be counseled on proper storage of prescription and OTC medications in the home and to contact their school administration for safe handling and storage of a child's medications during school hours. The American Academy of Pediatrics offers a policy statement highlighting the importance of collaboration between school physicians, community prescribers, school nurses, other school health professionals, parents and guardians, and patients to ensure safety for all students. Having clear communication with everyone involved helps to prevent therapeutic errors and administration mistakes.

Whether it's a science class mishap, an arts and crafts disaster, or classroom cleaning catastrophe, the Alabama Poison Information Center (1-800-222-1222) is available 24/7/365 for free consultation with healthcare providers and expert guidance on managing the adverse effects of these school place hazards. Healthcare professionals can play a crucial role in educating parents and teachers on the potential risks and preventative measures that can keep schools safe.

Beyond the Bubbles: The Hidden Dangers of Lye in Soap Making

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The resurgence of DIY hobbies has increased interest in making homemade soap. Though often promoted as a natural and gentle option, the process mainly involves a dangerous and corrosive chemical: sodium hydroxide, or lye. The process of producing soap from raw materials typically involves a chemical reaction between sodium hydroxide and a carrier liquid, which causes the mixture to heat rapidly and facilitate the melting of oils. According to the Tennessee Health Department, lye is a corrosive caustic alkali compound, it appears as a white, odorless solid at room temperature. When dissolved, it generates heat.[1] Sodium hydroxide can cause irritation and tissue damage upon contact with skin. Its vapors can also harm the eyes and respiratory system. Tissue damage occurs because it can break disulfide bonds in proteins, which can lead to necrosis at the injured site. The severity of the damage depends on factors such as contact duration and the concentration of the sodium hydroxide solution. Animal studies have shown that 50% sodium hydroxide can be lethal when applied dermally. Sodium hydroxide is also used in drain openers, oven cleaners, laundry products, and other products that are commonly found in the home.[2]



Clinical Presentation of Lye Exposure

The presentation of exposure can vary depending on the exposure sites. Upon exposure to sodium hydroxide, dissociated hydroxide ions (OH-) penetrate tissue surfaces, causing a histologic pattern of liquefactive necrosis, unlike acids that cause coagulation necrosis. This penetration continues until the tissues neutralize the dissociated hydroxide ions.[3]

Dermal Exposure: Skin contact with lye can result in immediate pain, erythema, edema, burns, and/or ulceration.

Ocular Exposure: Visual changes, intense pain, redness, tearing, photophobia or ulceration of the eyes.

Inhalation Exposure: Breathing sodium hydroxide can cause severe irritation of the upper respiratory tract with coughing, burns, and difficulty breathing.

First Aid and Emergency Management

Dermal Exposure: If lye-water or fresh soap batter splashes on any part of the body, immediately rinse the area with copious amounts of cold water. Then rinse some more, using soap to wash away the chemical residue. If a large quantity spills on a large area of the body, immediately remove clothing at once and rinse the entire body with cold water in the shower for 30 minutes. If the skin remains red or painful after that, go to the emergency room.[4]

Ocular Exposure: According to Goldfrank (2019), "The mainstay of therapy is immediate irrigation of the eye for a minimum of 30 minutes with 0.9% sodium chloride, lactate Ringer solution or tap water, if it is the only therapy immediately available. Several liters of irrigation fluid are recommended." After exposure, eye examination should be done.

Ingestion/Inhalation: If inhaled, remove the person to fresh air and keep them comfortable for breathing.[6] If swallowed in any form, rinse mouth thoroughly and then drink one or two large glasses of water. Activated charcoal is not recommended as it can interfere with endoscopy.[3] Do not induce vomiting. Seek medical attention immediately.[4]

Prevention and Patient Education[4,5]

Always use personal protective equipment – always wear goggles that completely cover your eyes. Wear chemical-resistant gloves. Ideally, wear long sleeves, pants, and closed-toe shoes.

1. Mix the sodium hydroxide-water solution in a room with adequate ventilation. Do not breathe in the fumes. Wear a facemask. Always mix the solution in a heat-safe container. When sodium hydroxide is mixed with water, it produces a heat reaction that goes up to 200°F.

2. Always add sodium hydroxide to the water, not the other way around. Adding water to the sodium hydroxide can create a caustic volcano that could foam out of the container.

3. Lastly, cover your workstation with cardboard or several layers of newspaper. A quick wipe of workspace with vinegar-soaked rag can neutralize any lye dust that may have gotten on the surface.

4. Ensure products are stored safely in the original container, not left out after use, and out of reach of children.



Making soap at home can be a rewarding hobby, but the process involves handling sodium hydroxide, or lye, a highly corrosive chemical. This substance poses significant risks, as it can cause severe burns to the skin, eyes, and respiratory system. Proper safety measures, including personal protective equipment and a well-ventilated workspace, are critical to prevent injury. In the event of exposure, immediate first aid is essential, followed by seeking professional medical attention if symptoms persist or call the Alabama Poison Information Center at 1-800-222-1222.

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