

Ocular exposures to laundry pods

Liquid laundry detergent capsules, also known as single-use detergent sacs or pods have been a common pediatric exposure since 2011 when they were released in the United States. Ingredients differ between manufacturers, but mostly include varying concentrations of anionic surfactants, non-ionic surfactants, propylene glycol and ethanol encapsulated in a water-soluble polyvinyl alcohol membrane. Unintentional ingestion by pediatric patients is the most frequently reported route of exposure (>85%) and generally produces mild symptoms (vomiting, coughing); uncommon cases of significant symptoms including CNS depression, respiratory depression, and corrosive injury have been reported (*Clin Toxicol* 2019;57(11):1053-63). Ocular exposures, which account for about 15% of all pediatric exposures, have the potential to cause significant eye injuries.

The capsules are compressible and fairly pliable, but not intended to withstand forceful pressure or sharp objects. Ocular exposure generally occurs when a child is playing with the capsule and squeezing, causing it to rupture and spray the eye and face. It may be more common amongst children 2-5 years than those < 2 years due to this need for dexterity and strength. Once the detergents come in contact with the eye, ophthalmic damage is primarily caused by the high concentration of surfactants, causing direct injury to epithelial cells. Approximately 75% of ocular exposures will result in some effect (mainly conjunctivitis), but corneal injury/abrasion occurs in varying frequencies ranging from 3.4% to 12% (*Clin Toxicol* 2019;57(11):1053-63). In a small study at a referral center, pods were associated with corneal epithelial defect in 6/8 of cases (*J AAPOS* 2018;22:426-8). The concentrated detergents also contain preservatives which may promote inflammation and lead to cell death. The most common type of preservative, benzisothiazolin, is a known skin sensitizer and irritant. Most authors believe that pH of the detergents seems to play a lesser role in injury as the pH of the products is generally between 6-9 (similar to soaps and shampoos) which is unlikely to cause an alkaline burn.

After ocular exposure, thoroughly irrigate the eyes with water or an isotonic solution as soon as possible for 10-15 minutes. Depending on the severity of the exposure and persistence of symptoms, patients should be seen in a healthcare facility. Some cases describe a delay of several hours before experiencing severe symptoms, so patients may need to be monitored for a prolonged period. After presentation to the hospital, continued irrigation is important with a subsequent fluorescein eye exam for any uptake of dye. If there is any ocular damage present, treatment includes a topical antibiotic and pain reliever along with referral to ophthalmology. Case reports generally describe recovery within several days after appropriate care.

Call your local poison center for recommendations at 800-222-1222.



Photo: Iowa Statewide
Poison Control Center

Did you know?

Several efforts have been made to limit laundry pod exposures in children.

The small size, bright colors and squishy feel make pods very attractive to young children. Due to the number of pediatric exposures efforts have been made to make pods safer for children. Manufacturers have made packaging child resistant and opaque, so that children can not see the product inside. There has also been increased public awareness about the dangers of pods and warning labels added to packaging. These interventions and awareness contributed to decreased exposures from 2012-2017. With continued safety campaigns, improved packaging and proper storage and handling many pediatric exposures may be prevented.

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