

## April 2017 – CHILDREN’S HEALTH ADVISORY

### “Borax or Boric Acid” in Homemade Arts and Crafts “slime”.

**April 2017:** The continuous need to keep children occupied leads parents and teachers alike to find new and exciting ways to offer entertainment in both the classroom and home. Booming in popularity is a new homemade arts and crafts project that allows children to make the goopy, sticky, “slime” that was once sold in pharmacies and toy stores. The ingredients, which include Elmer’s glue, water, and sodium tetraborate otherwise known as “borax,” which can be found in liquid laundry detergent; can all be bought over the counter, and are proving to have harmful and irritative effects on children’s hands, eyes, and respiratory tract.

**Borax:** Known to cause irritation to the eyes, nose, and respiratory tract, Sodium Tetraborate, more commonly known as Borax, is a mineral found in nature alongside boron. In its powdered form, the solution can be easily dissolved in water, making its use extensive. Currently, Borax can be found in cleaning supplies, household detergents, pesticides (insect killer), weed killer, and in enamel glazes. To list just a few uses outside of what we would expect borax to be used for, it is utilized as a buffering agent to control swimming pool pH, a bleaching agent, a preservative in taxidermy, and as a fire retardant. Since borax is very useful across a wide range of different industries, and the use of this chemical is growing in popularity, especially among children and teens, its toxicity needs to be addressed,

**Exposure:** The Pesticide Information Center (NPIC) noted that “you can be exposed if you are applying boric acid and you get it on your skin, in your eyes, breathe it in, or accidentally eat this product. This can also happen if you get some on your hands and eat or smoke without washing your hands first. Exposures can also occur if products are accessible to children or pets” (NPIC: boric acid). Borax, or one of many boric acid derivatives, can be corrosive as well as irritating. When ingested, it can cause nausea, vomiting and stomach aches.

Currently, cases are being reported of children being exposed to borax and boric acid in the popular homemade arts and crafts experiment of “slime” making. “Slime,” that is heavy in borax and Elmer’s glue, can not only be corrosive to children’s hands, but can lead to serious and in many cases severe burns, even requiring hospitalization. The “Do-it-Yourself slime” that can be made at home using borax and Elmer’s glue certainly led to a serious outcome for an 11 year old child from Massachusetts who developed second and third degree burns on her hands which, “doctors said is likely the result of prolonged exposure to one of the recipes key ingredients.”

Even before “homemade slime” became a craze, studies into respiratory distress in relation to the chemical particulates have showed significant risk to children in specific. There is a documented case of a one year old female who was presented to the emergency room after being heavily exposed to a box of laundry detergent powder. It was noted that, “approximately ten hours after detergent exposure, the child developed a mucopurulent eye discharge as well as a dry, nonproductive cough. Sixteen hours

after the initial exposure, she developed paroxysmal coughing associated with perioral cyanosis, which prompted the child's parents to seek further medical evaluation (D. Wheeler et. Al, 2003)."

Because the targeted audience for homemade slime is children, another significant risk factor comes into play, as there is the real potential that young children will put slime in their mouth or eat it. It has been noted that, "after ingesting or inhaling laundry detergent powder, eight children required hospital admission. The predominant symptoms were stridor, drooling, and respiratory distress. Five children were admitted to the intensive care unit, and four children required endotracheal intubation (Arnold Einhorn, et. Al, 1989)."

**Vulnerable Populations:** Populations most susceptible to borax exposure are children, pregnant women, and refining workers. The European Chemicals Agency (ECHA) notes that sodium tetraborate "may damage fertility or the unborn child, and is a serious eye irritant." Additionally, refining workers are put at an elevated exposure if working in a borax refining plant. Proctor and Hughes note that "in the 113 workers exposed to boric acid, there were statistically significant increases in symptoms of eye irritation, dryness of mouth, nose, and throat, and productive cough compared to control (Chemical Hazards of the Workplace, 1991)." Children who play with the homemade slime are significantly at risk depending on the concentration of borax and the duration of exposure. Furthermore, children are at an elevated risk as they are still not fully aware of the dangers of putting such chemicals into the mouth.

**Alternate methods of making "Slime":** Alternative methods of making homemade slime include mixing cornstarch and water. Just add cornstarch to a bowl and keep adding water until you reach the desired consistency. Another method to making slime is using powdered fiber and water. Water can be added little by little to the fiber bowl, and this can be heated in a microwave to form the desired slime. Yet another alternative to the borax method is to make slime using liquid starch and Elmer's glue. Each of these methods can be utilized to make slime without the use of harmful borax.

#### References:

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