

Water beads have been shown to cause severe injuries to children...

- Dermatitis Rash
- Nasal Cavity Injury
- Hearing Loss
- Lung Injury
- Intestinal Obstruction
- Infection
- Exposure to Toxic Chemicals
- Brain Injury
- Toxic Encephalopathy
- Seizure
- Sepsis
- Septic Shock
- Asphyxiation
- Death

Water beads pose imaging and diagnostic challenges...

You cannot consistently see water beads on imaging, such as x-ray and on CT scans. The beads often look like gas or can mimic duplication cysts, rather than a foreign body ingestion. **While water beads can be detected by ultrasound, it can missed beads, often mimic cyst pathology, and can underestimate the number of beads that have been ingested.** Be aware that water beads may also conceal themselves in other parts of the digestive tract, and it may be necessary to undergo a second operation to address any remaining beads. Additionally, water beads have the potential to accumulate and form a mass. **The type of brain injuries** caused by water beads **may not be readily visible on traditional MRI.**

Knowns, Known-Unknowns, and Unknown-Unknowns...

There is no systematic collection of data on disease, injury, and death caused by chemicals in toys. **The available sources of data may capture only the most obvious and acute cases of toy-related chemical health effects and may not provide a comprehensive picture of the problem's scope.** There is currently insufficient data to determine how many children suffer acute, sub-clinical, chronic, or delayed adverse health effects due to chemical exposures from toys. Most often the chemical content of toys is not readily available. The safety data sheets transmitted by suppliers to toy manufacturers are likely to contain relevant information about chemical hazards. **However it cannot be assumed that toy manufacturers know the exact chemical content of all of the components of their products.** (WHO, 2006)

Remember B.E.A.D.S

- **Be aware** water bead injury symptoms may appear similar to other conditions
- **Evaluate** even with advanced imaging technology water beads can be challenging to identify and detect. Ultrasound is best, followed by CT, and two field Xray.
- **Ask** caregivers if water beads have been used in their child's home, school, therapy clinic, often ingestion is not witnessed
- **Determine** if the terms on the product's label are regulated, non toxic is an unregulated term
- **Save** lives by always reporting toy product injuries to SaferProducts.gov

Current Situation

Age restriction and parent observation are not an effective way to prevent water bead ingestion from occurring. Often, ingestion is not witnessed by caregivers.

A recent study found **nearly half of the reported incidents occurred in school-aged children, 30% occurring while the children were at school.**

Currently, **clinicians lack proper information on the dangers of water beads,** as well as on how to identify and treat cases of ingestion, insertion, and inhalation.

The term "non-toxic" is misleading when applied to water beads. Because there is never 100% complete polymerization, residual acrylamide monomers will always contaminate polyacrylamide. Additionally, in time and under certain conditions polyacrylamide reverts back to its dimer. **To avoid accidental repeated exposure to toxic acrylamide monomers you need to handle polymerized acrylamide materials, like water beads, with the same caution you would the monomer.**

The term "**non-toxic**" carries a certain connotation in society. **To most it means safe,** harmless, pure, and tested to be toxin free. Many members of the general public, including clinicians, are not aware the product **label of "non-toxic" is shockingly unregulated.**

Calls and reporting of poisonings to Poison Control Centers and the Consumer Product Safety Commission, as well as submission of **case reports** to scientific journals, **are submitted voluntarily.**

Most medical students, residents, and practicing **physicians lack confidence in their occupational and environmental medicine (OEM) and medical toxicology (MT) training.** Clinical decision making can be negatively influenced by heuristics bias such as availability, anchoring, confirmation, bandwagons, and affect. For example, framing and a lack of contextual information could reinforce confirmation bias in decision-making, such as whether or not there is a need to contact poison control as well as the decision to include chemical exposure in the differential diagnosis. **"Non-toxic" claims on product packaging may lead to the underestimation of risk by parents and misdiagnosis of injury and disease by clinicians.**

The fact is, consumers and physicians are frequently unaware of the chemical ingredients and composition of toy products at the time of purchase and treatment. Patient symptoms and clinical judgement play a crucial role in the accurate diagnosis of poisoning and chemical exposure.

Specific **clinical features of acrylamide intoxication are more conclusive** than electrophysiological and biochemical laboratory tests for **diagnosis .**

It should be noted that **analyzing acrylamide in solid materials, such as toys,** is difficult; chemical analysis is complicated **due to interference issues.** Therefore, **accurate quantification of acrylamide content** at the analysis is **often not possible.**

The number of children exposed to these toxicant containing beads is unknown! We do not know the long term health effects children may face due to these exposures.

Problem Solving Together

Water bead injury, consumer product injury, can happen to any family including yours. In 2017 That Water Bead Lady, Inc founder's eldest daughter received water beads as a gift for her sixth birthday. Over the course of a few weeks, unbeknownst to the family, the water beads collected inside of the gastrointestinal tract of the **family's one-year-old baby, Kipley.** Kipley was **not only severely injured by the water beads,** discovered during emergency exploratory surgery, **she was poisoned.** Medically, emotionally, and economically Kipley's brain injury, Toxic encephalopathy, has forever altered the trajectory of their family's life. **The medical, legal, and data system vulnerabilities Kipley's tragedy reveals are too important to ignore.** One of the first steps to solving a problem is determining the right metrics to gauge success. Individuals will optimize for a single objective regardless of the repercussions, this becomes a problem when other significant factors are neglected.

There are inherent strengths and limitations with all large data registries. While Poison Control's NPDS and Consumer Product Safety Commission's NEISS data registries are important tools, their limitations must be considered when interpreting published data registry studies. **Reports are made voluntarily which results in significant variation in the number and types of cases based on local practice patterns, resulting in reporting bias.** While no registry is perfect, limitations need to be honestly acknowledged, and efforts should be made to be more rigorous in approach when gathering data and interpreting studies based on data sets which lack true denominator data. Remember, the conclusions drawn from these studies are only as good as the source from which they come. **Consumer product safety is an issue that impacts everyone, and with your help we can make the future a better place.**

Let's Talk

Scan the QR code below to find more information including additional references, studies on water beads, and complementary information for the public and professionals that your center can use..



If you have questions, please **reach out** to us at **ThatWaterBeadLady@gmail.com**

Reference

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Additional references and research can be found on ThatWaterBeadLady.org

The Problem



Non-toxic is a shockingly unregulated term

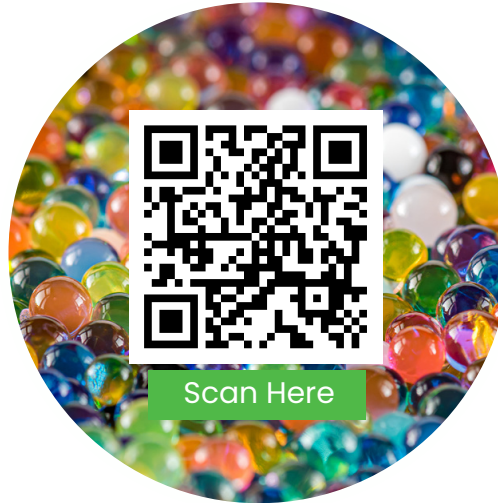
Water beads, are known by many names. They are marketed as a safe, ecofriendly, biodegradable, non-toxic, sensory toy for children, but these **claims can be misleading**.

Water beads are designed to absorb liquids, expand in size and volume, and are most often made of polyacrylamide-polyacrylate. Because the polymerization process is never 100% complete, polyacrylamide **can contain residual neurotoxic acrylamide monomers**. For this reason, polymerized gels should be treated with the same caution as the monomer.

Acrylamide is a potent neurotoxin and **exposure can occur through ingestion, inhalation, and skin contact**.

The **number of children exposed to these toxicant containing beads is unknown!** We do not know the long term health effects children may face due to these exposures.

Yes, water beads
can be toxic!



Contact

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