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hospitals, numerous primary care  
and specialty clinics, multiple  
research institutes and several  
community service and outreach  
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affirmative action institution.*

11/04(15)

**Information on Arsenic in Food**

Recent reports have described arsenic levels in a variety of foods including:

- rice products such as brown or white rice, rice cakes, and rice milk
- foods sweetened with organic brown rice syrup such as cereal and energy bars
- non-rice products such as apple juice

Arsenic is a naturally occurring element, found widely in the environment. It is present in some types of rock and soil and is found in measurable amounts in most seafood and in many grains and vegetables. Arsenic is used in a number of industrial processes.

Arsenic-containing compounds can be classified into two groups: Organic arsenic compounds are usually produced by an animal that has metabolized the inorganic arsenic into a less toxic form, and vary in toxicity. The organic arsenic compounds found in seafood are thought to be nontoxic.

**Health Effects**

What is known about health effects from arsenic is based on long term exposure to very high exposures, such as in populations exposed to contaminated water in Taiwan, India, and Bangladesh, or from those occupationally exposed at smelters and agricultural sites. Short term health effects after high level exposure generally include symptoms such as nausea, vomiting, abdominal pain and diarrhea, but are extremely unlikely to occur at the levels observed in studies of typical US foods.

The health effects of very low-level arsenic in foods, as noted in recent reports, are less clear. Currently, there is no level of inorganic arsenic exposure that has been shown to be completely safe, but most experts believe that ingestion of these small amounts of arsenic pose minimal risk when eaten as part of a balanced diet.

**Arsenic in the Diet**

The risk of arsenic from all sources is

estimated based on a lifetime exposure. The risk from eating foods with more arsenic on some days may be balanced by eating other foods with less arsenic on other days. Daily drinking and cooking with water at 10 ppb, the highest level permitted by US EPA regulations, in a typical amount would contribute as much as 1/2 a serving of average rice cereal. Since infants eat a more limited diet, their exposure to arsenic may be higher than in people who are eating a more varied diet.

Recent findings by Consumer Reports (November 2012) and the FDA (September 2012) suggest that some rice products have higher inorganic arsenic than others and often depends on where the rice is grown. Additional studies are under way by the FDA. Based on these early studies, it has been calculated that eating regular amounts of these products over a lifetime could increase the risk

*(Continued on page 2)***Dosing Errors of  
Acetaminophen Products:  
A Case Study**

- Tonya Drayden, RN, CSPI

*Case Study of a 58yo male with chronic pain associated with back pain.*

During an evaluation for acute abdomen, his primary care physician discovered following lab values:

- APAP = 26mcg/ml (>3-4hrs post last dose)
- AST = 62
- ALT = 124
- INR = 1.2
- WBCs slightly elevated (UTI), and all other lab values are within normal limits.
- Pain relieving drug of choice: Acetaminophen 500mg, 4,000mg daily.

*(Continued on page 2)*

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of some cancers by a very small amount. The effects on a developing child's brain at similar levels are less clear.

Clear recommendations do not exist regarding balancing the potential hazard associated with arsenic exposure with the benefits of a balanced diet that includes dietary products that are known to contain small amounts of arsenic.

### **Concerns about arsenic exposure**

Until more is known, efforts to reduce potential exposure may include:

- Choosing rice products lower in arsenic.
- Rinsing rice before cooking.
- Limiting the serving size and frequency of foods noted to be higher in their inorganic arsenic content.
- Avoiding the frequent use of rice milk in children less than 54 months of age.
- Limiting the use of foods with large amounts of brown rice syrup.

*Adopted from: Robert J. Geller, MD, Southeast Pediatric Environmental Health Specialty Unit, Emory University Department of Pediatrics, Atlanta GA*

### **Additional Information:**

- Pediatric Environmental Health Specialty Unit serving your area. <http://www.pehsu.net>
- "Arsenic in your food." Consumer Reports, November 2012, pages 22-27. <http://www.consumerreports.org/cro/magazine/2012/11/arsenic-in-your-food/index.htm>
- "FDA releases preliminary data on arsenic levels in rice and rice products." September 19, 2012. <http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm319972.htm>
- "Arsenic in drinking water." World Health Organization, 2011. [http://www.who.int/water\\_sanitation\\_health/dwq/chemicals/arsenic.pdf](http://www.who.int/water_sanitation_health/dwq/chemicals/arsenic.pdf)
- "Arsenic in Rice and Rice Products". American Academy of Pediatrics. September 2012. <http://www.aap.org/en-us/about-the-aap/aap-press-room/Pages/Arsenic-in-Food-Products.aspx> and <http://www.healthychildren.org/English/News/pages/Arsenic-in-Rice.aspx>
- "ATSDR Toxicological Profile on Arsenic." <http://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=22&tid=3>
- "Report on Carcinogens, 12th ed." National Toxicology Program.(2011) <https://docs.google.com/viewer?url=http://ntp.niehs.nih.gov/ntp/roc/twelfth/profiles/Arsenic.pdf&pli=1>
- Cottingham KL. Environ Health Perspect. 2012 May; 120(5):623-6. Dartmouth University. "Arsenic in Food Frequently Asked Questions." <http://www.dartmouth.edu/~toxmetal/assets/pdf/arsenicinfoodfaq.pdf>

(Continued from page 1) Dosing Errors of Acetaminophen Products

It is not clear how long he has been using plain acetaminophen. A review of his lab values denotes incremental increases in his AST/ALT values since March 2012. There is no history of alcoholism or hepatitis. Further clarification of his dosing regimen revealed that he habitually takes 2,000mg (4x500mg tablets) in the morning followed by another bolus of 2,000mg acetaminophen each evening. Though this patient stayed within the maximum daily dosing parameters, his choice to double the recommended dosing has likely contributed to the chronic elevation of his LFTs.

Acetaminophen (APAP) is one of the most commonly used over-the-counter pain reliever used in the U.S. From 1998 – 2003 APAP was the leading cause of acute APAP related accidental overdose. In 2005 the National Poison Data System demonstrated that calls about acetaminophen (APAP) resulting in major injury numbered:

- 1,187 for OTC single-ingredient
- 653 for OTC combination ingredients
- 1,470 for prescription combination products

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Last year, the Oregon Poison Center handled over 2,980 cases concerning the accidental misuse or abuse of acetaminophen containing products. In 2011 OPC data has documented cases of 1,578 hospitalizations and 5 deaths associated with APAP poisonings.

In January 2011 the FDA introduced new recommendations for drug manufacturing of acetaminophen (APAP). The request is for voluntarily limiting the strength of APAP in prescription drug products. This action would limit prescription drugs containing 500mg or more of APAP to no more than 325mg of acetaminophen per tablet. Drug companies will have three years to make these changes. The FDA has also directed recommendations towards decreasing dosing errors for pediatric populations.

To date there have been at least four different acetaminophen dosing formulations for pediatric populations:

- Infant drops: 80mg/0.8ml per dropper
- Children's liquid: 160mg/5ml per teaspoon
- Children's Tylenol chews & Meltaways: 80mg each
- Junior Tylenol chews & Meltaways: 160mg each.

Multiple dosing errors have occurred due to caregiver confusion associated with dispensing differing concentrations with a combination of measuring tools

In June 2011 the FDA called for the standardization of all pediatric single-ingredient APAP liquid products to 160mg per teaspoon. This would include infant formulations. This recommendation would necessitate the discontinuation of the current infant drops formulation, and may lead to some confusion among parents.

The Oregon Poison Center continues to receive multiple calls daily concerning the misuse and abuse of APAP containing products for adult and pediatric populations. Many of our calls are associated with:

- Inaccurate knowledge about their pain reliever
- Errors in drug dispensing
- Incomplete following of labeled directions

We therefore urge all pharmacists, physicians and nurses to ensure patients and caregivers carefully check product concentration and closely follow dosing instructions either on the package itself or as directed by health care professional. Patients or caregiver should be counseled to consult their primary care provider or pharmacist if there are any questions or confusion during product purchase or administration. Should an error occur during the dosing of any medication, the Oregon Poison Center is available to health care providers and/or the general public for consultation 24 hours a day, 365 days a year at 1-800-222-1222.

## The Oregon Poison Center Website has a New Look

We are proud to announce the release of our new website for the Oregon Poison Center. You can still find us at [www.oregonpoison.org](http://www.oregonpoison.org). Our look is streamlined and updated. We have a great new page, our [Materials Order Form](#), where ordering Mr Yuk stickers and other materials is just a click away. Give us a try.

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Working with Safeway, the Oregon Poison Center is able to send materials out to the general public for free. This includes medical offices, day care sites or any other business that cares enough to give these to their customers and/or employees.

Please only order what you need and allow up to two weeks for processing. If you need help with your order please call 503-494-7799. Thank you.

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## Tox Quiz

# POISON PALS

Which of the following calls to poison centers went up immediately after Hurricane Sandy?

1. Battery ingestions by small children
2. Food poisoning from losing refrigeration with power outage
3. Information on when the power might come back on
4. Carbon monoxide exposure from using gas powered generators

**Answer:**

While all of the above are real concerns after a storm with power outages, and item 3 is an inappropriate call to a poison center; the correct answer is 4. After hurricanes, windstorms, ice storms and blizzards and any other event that knocks out power the number of serious carbon monoxide exposures rises as people use gas powered generators indoors. These should be operated so they can exhaust fumes at least 20 feet away from any home or enclosed space like a garage or carport.



PRAISE ▪ CREDIT ▪ GLORY ▪ KUDOS ▪ THANKS  
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Regional toxicology resource serving Oregon, Alaska and Guam. Emergency treatment recommendations for poisoning and toxic exposures.