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DATE: June 25, 2018

FROM: Saint Louis County Department of Public Health

TO: Saint Louis Area Primary Care Physicians and Oncologists

TITLE: Health Advisory: Report of Coldwater Creek Community Exposures Released

PAGES TO FOLLOW: 3

The U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry has released a public health assessment indicating that historical radiological contamination in and around Coldwater Creek in St. Louis County could have increased the risk of some types of cancer in people who have played or lived in and around the creek. A summary of the results of this report for healthcare providers is included, as well as contact information if you need support in caring for patients with a history of exposure.

Evaluation of Coldwater Creek Community Exposures

North St. Louis County, Missouri – Information for Health Care Providers

ATSDR developed this flier to give health care providers information to help address patients' concerns related to radiological exposure to contaminants from the Coldwater Creek site.

St. Louis was a center for refining uranium ore to support the Manhattan project. Byproduct waste material was stored along the banks of Coldwater Creek (St. Louis Airport, North St. Louis County) for drying the material prior to being shipped for additional processing. It was stored in open piles, and precipitation carried some of the radiologically contaminated waste material into the creek. Flooding carried contaminated sediments to some residential yards. Since 1998, the U.S. Army Corps of Engineers has been characterizing and cleaning up areas related to the site. The Agency for Toxic Substances and Disease Registry (ATSDR) evaluated community exposures to radiological contaminants in sediment, water, or soil while playing or living near Coldwater Creek.

THE BOTTOM LINE – Coldwater Creek Community Exposures

- Thorium-230, and to a lesser extent, radium-226 and uranium-238 are the contaminants of concern.
- Exposures from thorium and other radiological contaminants to residents who played or lived along the creek in the past (1960s to 1990s) may have increased the lifetime risk of certain cancers (bone, lung, leukemia, skin, or breast).
- Exposures to residents who lived along the creek more recently (2000s and on) may have increased the lifetime risk of bone or lung cancer.
- The effective whole-body dose is not expected to result in any harmful health effects and doses to individual organs would not result in any non-cancer health effects.
- ATSDR does not recommend any added general cancer screening for people who played or lived near Coldwater Creek. Patient medical and exposure history and presentation, best practices, and recommendations from the U.S. Preventive Task Force should be used to determine medical management.

Health Effects of Thorium, Radium, and Uranium

Th-230, Ra-226, and U-238 are naturally occurring radioisotopes that emit alpha particles as they decay. The energy of the alpha radiation emitted is similar. All have very long half-lives and will not decay appreciably during a person's lifetime. For Th-230 and Ra-226, radiological effects are expected to predominate (that is, no health effects from their chemical interactions with the body are known to occur before effects from the radiation are observed). Uranium, on the other hand, may cause chemical damage to the kidney microtubules before any radiation effects would be seen. However, uranium doses at Coldwater Creek were many magnitudes lower than concentrations likely to result in health effects.

Thorium, radium, and uranium taken up into the bloodstream are known to build up on bone surface and may be incorporated into the bone matrix. Inhaled thorium, radium, and uranium can also be retained in the lungs. Historical exposures at Coldwater Creek could result in bone surface doses of up to 63,000 millirem (mrem) – 250 times lower than bone surface doses associated with bone cancers. Past exposure could result in red marrow doses up to 3,200 mrem – 50 times lower than red marrow doses associated with leukemia. Past exposure could result in lung doses up to 2,900 mrem – 6,800 times lower than doses associated with lung cancers. Recent exposures were estimated to be lower than past exposures.

Approach to Patient Management

We recommended in our report that potentially exposed residents or former residents share their potential exposure related to Coldwater Creek with their physicians as part of their medical history and consult their physicians promptly if new or unusual symptoms develop. Upon request, ATSDR can facilitate a consultation between residents' personal physicians and medical specialists in environmental health.

Exposure History

Take an exposure history of patients to learn how long and for how often they may have been exposed. Direct contact with or close proximity to contaminated media near the creek is necessary for exposure. ATSDR's evaluation was based on a worst case very frequent exposure of extended duration.

Radiological Testing

Radiological testing is NOT indicated for the doses potentially received from this site. While radioactive materials can be measured indirectly by analyzing blood, feces, saliva, urine, or the whole body for different types of ionizing radiation, the quantity of the slowly released radioisotopes from the bone would likely be very small and possibly undetectable over instrument background levels.

Cancer Screening

- Screen patients according to standard clinical protocols and U.S. Preventive Task Force recommendations as suggested by the patient's presentation, age, and gender.
- Many procedures that could detect the cancers of interest are associated with risk (such as additional radiation from imaging) that may outweigh the potential benefit.

Advise/Counsel Patients

- As indicated, reassure patients that not all current or former residents would have experienced exposures as high as conservatively assumed by ATSDR in this evaluation.
- Counsel patients that doses received were much lower than doses associated with disease, fertility problems, birth defects, and cancer in studies of radiologically-exposed populations.
- Advise patients that radiological testing or non-symptomatic disease screening beyond standard clinical protocols is not indicated given the exposure doses estimated at this site.
- Inform patients that radiation-induced cancers are indistinguishable from cancers caused by other factors and that it is difficult to attribute any cancer to Coldwater Creek due to the time that has passed and the uncertainty in past exposure estimates.

Where to Learn More

ATSDR Case Studies in Environmental Medicine: www.atsdr.cdc.gov/csem/csem.html

- Taking an Exposure History
- Radon
- Uranium

ATSDR Toxic Substances Portal: www.atsdr.cdc.gov/substances/index.asp

ATSDR Coldwater Creek Site: www.atsdr.cdc.gov/sites/coldwater_creek

For questions about ATSDR activities at this site, contact the site team at ColdwaterCreek@cdc.gov.

These summary tables provide ATSDR's estimated lifetime cancer risks from past (1960s – 1990s) or recent (2000s and on) exposure to contaminants in Coldwater Creek sediment, water, or floodplain soil.

Please see ATSDR's Public Health Assessment at www.atsdr.cdc.gov/sites/coldwater_creek for details.

PAST EXPOSURES (1960s-1990s)

	Number of Lifetime Additional* Cases in 10,000 People		U.S. Lifetime Risk of Specific Cancer in 10,000 People
	Recreational	**Residential**	
Bone	**10**	**30**	10
Lung	**3**	**10**	650
Leukemia	**1**	**4**	150
Skin	less than 1	**2**	200
Breast	less than 1	**1**	1,200 (in women)

RECENT EXPOSURES (2000s and on)

	Number of Lifetime Additional* Cases in 10,000 People		U.S. Lifetime Risk of Specific Cancer in 10,000 People
	Recreational	**Residential**	
Bone	less than 1	**6**	10
Lung	less than 1	**1**	650

Tables show highest estimated increased lifetime risks of cancer at organ site for recreational or residential exposures, assuming exposure from birth to 33 years. Only cancer types with a greater than 1 in 10,000 risk are shown. Approximate U.S. lifetime risk of specific cancers based on SEER data and shown for comparison only.

*U.S. lifetime background risk of all cancers is about 3,800 cases for every 10,000 people.