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*Detection of airborne plutonium from Rocky Flats in air filters collected along Indiana Street under the episodic high-wind conditions of April 6, 2024*

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[very slightly edited to correct misplaced superscripts resulting from a .jpg source]

On April 6, 2024, the Denver metropolitan area experienced very strong winds at the Rocky Flats National Wildlife Refuge and its surroundings. During this storm, Michael E. Ketterer and Jon S. Lipsky collected three high-volume air filter samples using portable equipment at roadside locations: i) former East Gate of the Rocky Flats plant; ii) Southeast Gate of the Refuge, and iii) Colorado 128 at the Rock Creek underpass. The two samples along Indiana St. were collected while the prevailing wind was coming directly from the west. We observed that wind gusts were crossing the Central Operating Unit, as well as portions of the Refuge, all of which are known to contain elevated  $^{239+240}\text{Pu}$  activities in surface soils.

The samples were analyzed at in a radiochemistry laboratory at Northern Arizona University, using mass spectrometry after incinerating the filters. **Plutonium was unequivocally detected in the two Indiana St. air filters.** With less than 30 minutes sample collection time, quantities ranging from 47 to 128 milligrams of filter ash were recovered from the filters; plutonium was detected in all six of the individual preparations of ash from the two Indiana St. samples.

**Plutonium was not detected in the sample collected at the Rock Creek/CO 128 location,** as one may anticipate, since we observed that the April 6th prevailing winds from the west were traversing land well northwest of known Rocky Flats contaminated areas.

Activities of  $^{239+240}\text{Pu}$  in the Indiana St. filter ash ranged from 0.15 to 1.19 pCi/g [of Pu], above the method detection limit of 0.13 pCi/g (25 milligrams of ash analyzed). In one of the six preparations, the measured atom ratio  $^{240}\text{Pu}/^{239}\text{Pu}$  confirmed that the material was “weapons grade” originating from Rocky Flats and most definitely not explainable as “global fallout” or “background”. The  $^{239+240}\text{Pu}$  activities in the ash are also elevated above levels plausibly attributable to a non-Rocky Flats Pu source. The highest activity slightly exceeds the Colorado “state construction standard” of 2 dpm/g, or 0.9 pCi/g.

While limited in number and demonstrative in nature, **these data prove the obvious: contaminated soils originating on Federal property at the Rocky Flats COU and/or Refuge remain a present-day source of Pu-contaminated fugitive dust. This fugitive dust source is leaving Federal lands, and is being transported in a prevailing easterly direction under regular, event-driven strong wind conditions.** The high-wind conditions such as existed in April 6, 2024 are not unusual at Rocky Flats. Despite the Refuge status as protected land receiving limited foot traffic, soil is being lost via aeolian transport under the present conditions. Encouraging more usage and land disturbances in the “Krey-Hardy plume” contaminated areas of the Refuge and/or COU will accelerate the rate of soil loss, and ultimately result in increased deposition of Rocky Flats plutonium-contaminated soils and particles towards receptor areas.

In the absence of any willingness on the part of the US Department of Energy to conduct similar studies, communities and local governments should be prepared to conduct their own air sampling,

especially when it is most needed: Pu transport definitely takes place under strong wind, episodic conditions. The methodology used herein is suited for “citizen science” participation by motivated individuals and groups.

The reader is referred to Michael E. Ketterer's signed Declaration of May 21, 2024 for additional details.