

# Dynamic Alpha Particle Source

**Los Alamos National Laboratory**

**Radiation and Protection Group, RP-2**

**Adam B. Gauss, Alan L. Justus, Murray E. Moore**

**AMUG - May 1, 2008**

# Dynamic Alpha Particle Source

---

## Problem:

Evaluation of Continuous Air Monitors (CAM) in the presence of a plutonium aerosol is time intensive, expensive, and requires a specialized facility.

## Solution:

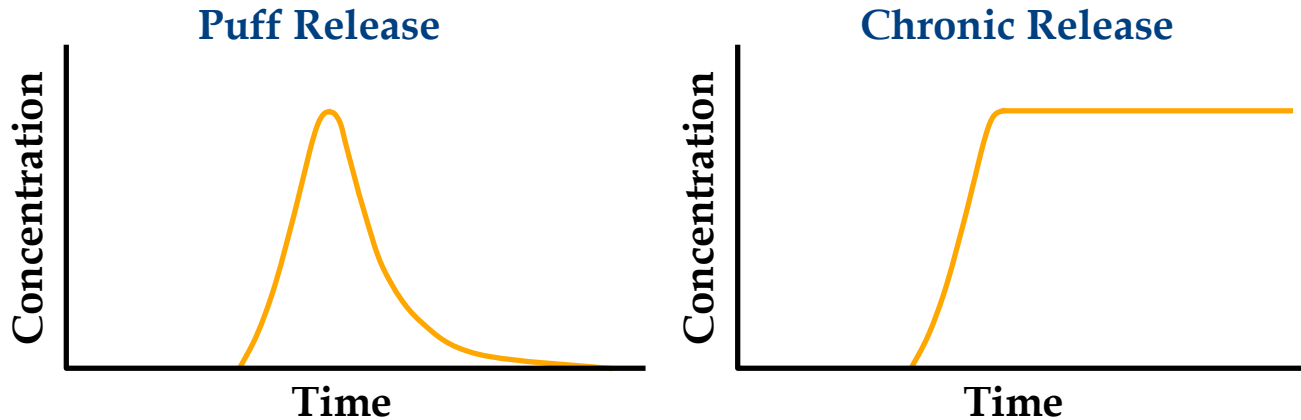
The Radiation and Protection Group RP-2 at Los Alamos National Laboratory has designed and begun evaluation of a Dynamic Alpha Particle Source (DAPS) intended to replicate the presence of a plutonium aerosol cloud.

# Dynamic Alpha Particle Source

## Principles of Operation

Designed to dynamically introduce radioactivity, with the appropriate alpha spectrum.

- Puff Release
- Chronic Release

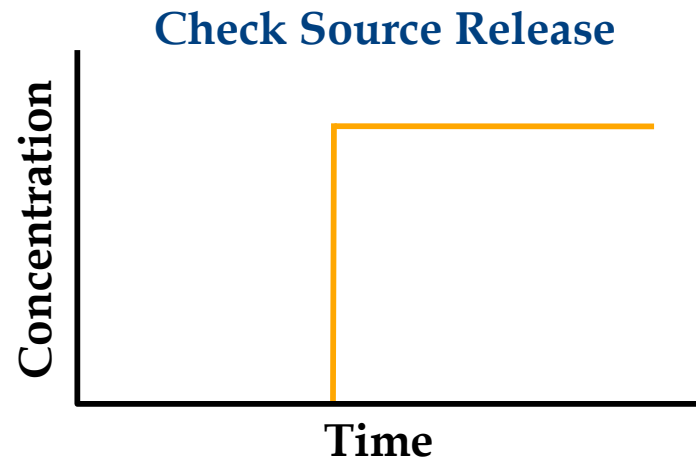


# Dynamic Alpha Particle Source

---

## Current Evaluation Techniques

- Check Source
- Pu-239 Aerosol Generation



# Dynamic Alpha Particle Source

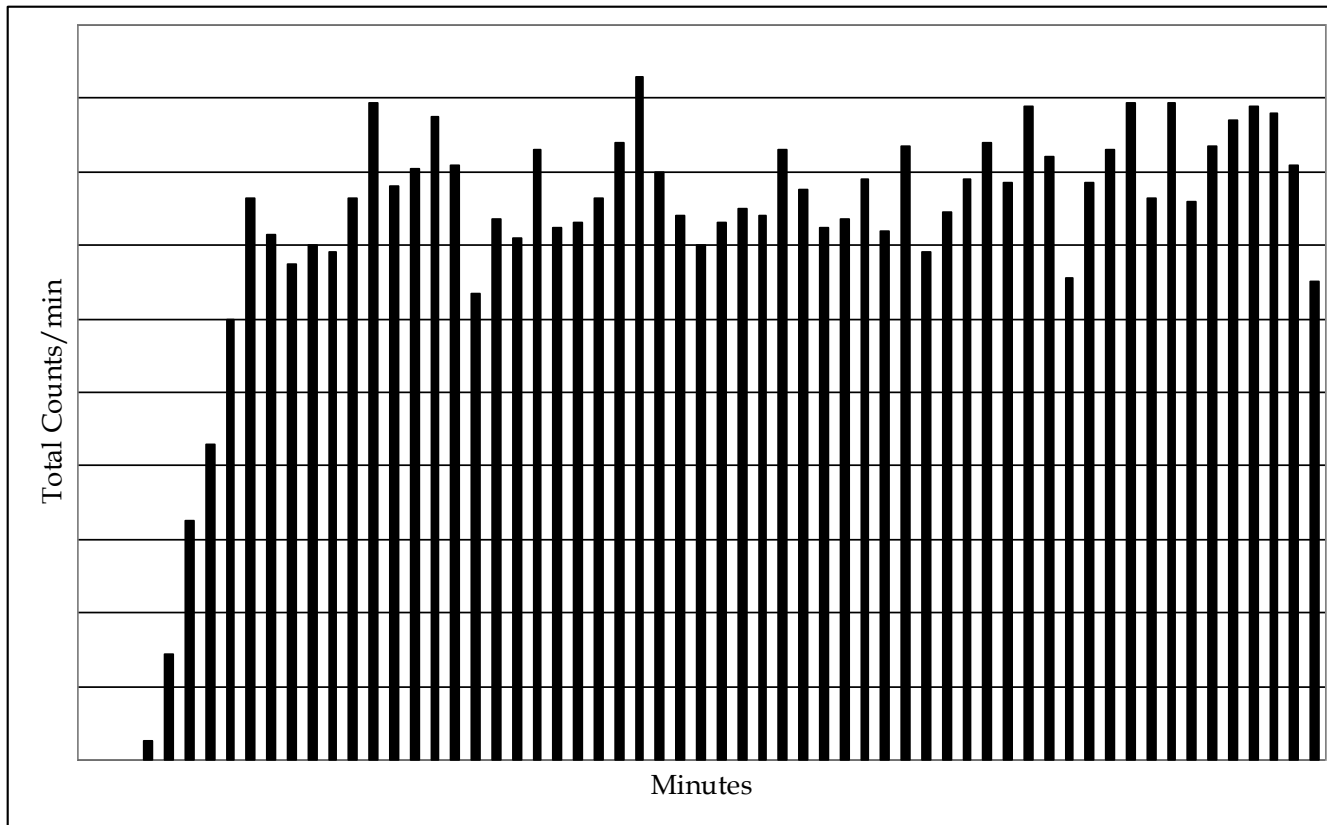
---

## Advantages of DAPS Unit

- **Adaptable for use in a number of different CAMs**
- **Provides non-specialized in-house testing**
- **Low cost: ~\$2,000 (Pu aerosol ~\$10,000 per test)**
- **Control of CAM for multiple test scenarios**
- **Repeatability**
- **Simulation of realistic plutonium aerosol spectrum**
- **Supports iterative development/evaluation of CAMs**

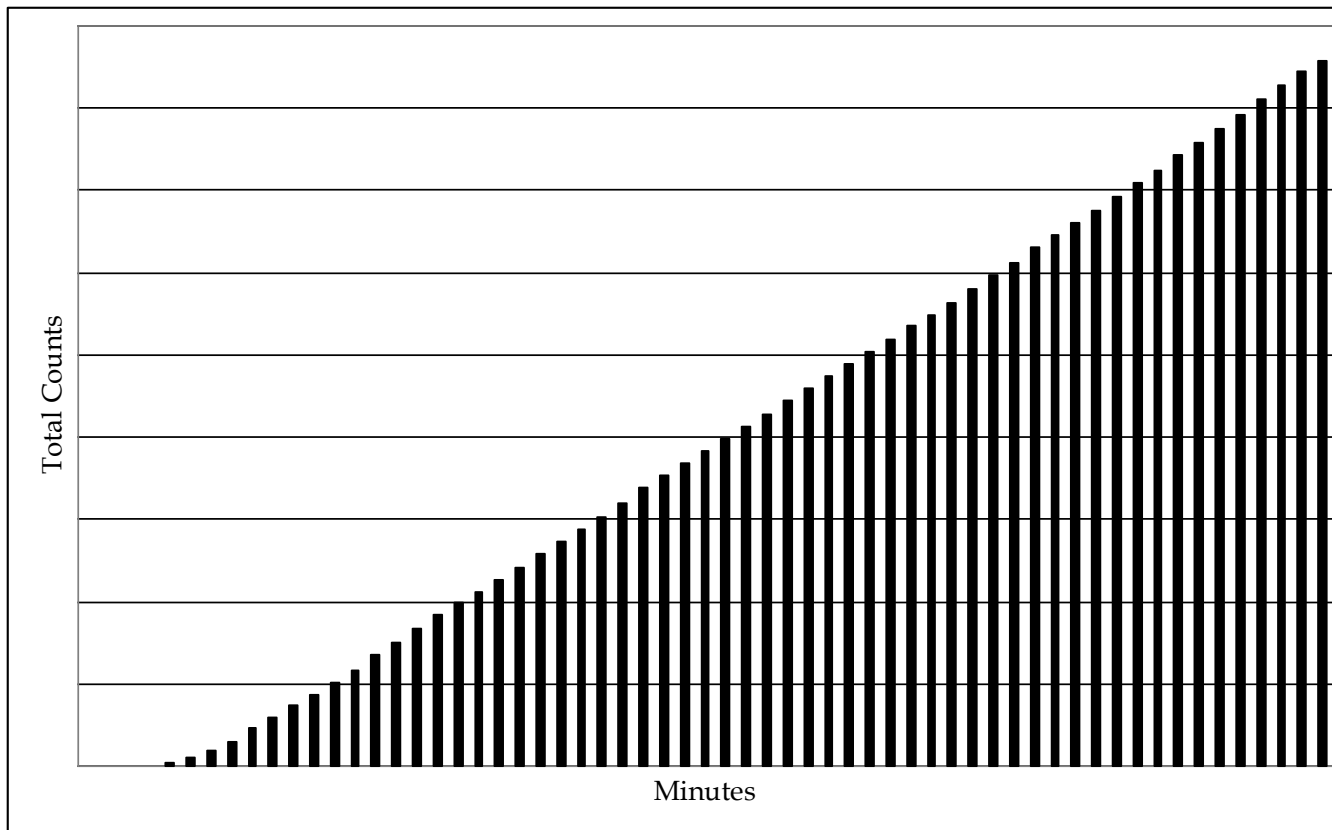
# Dynamic Alpha Particle Source

## Chronic Release Data (Activity)



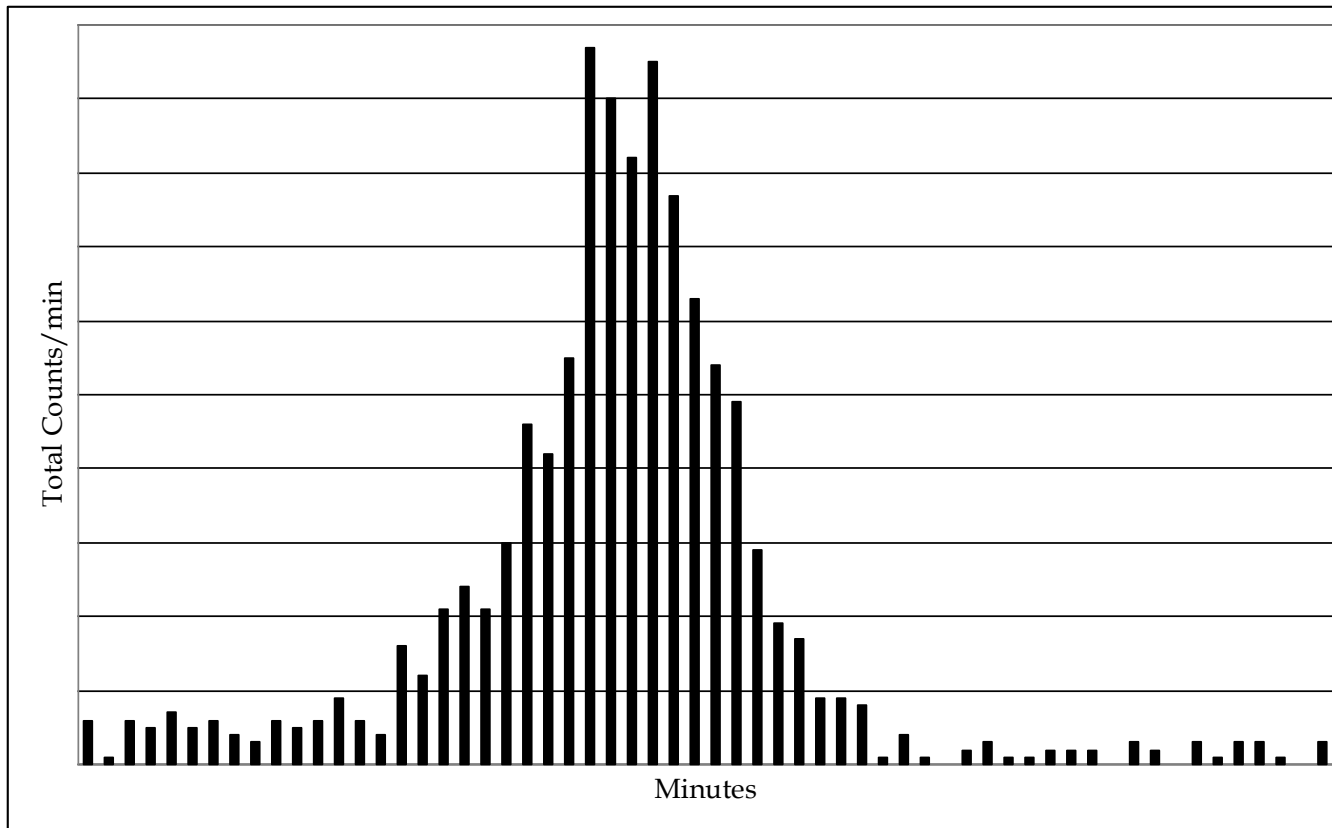
# Dynamic Alpha Particle Source

## Chronic Release Data (Integrated Total Counts)



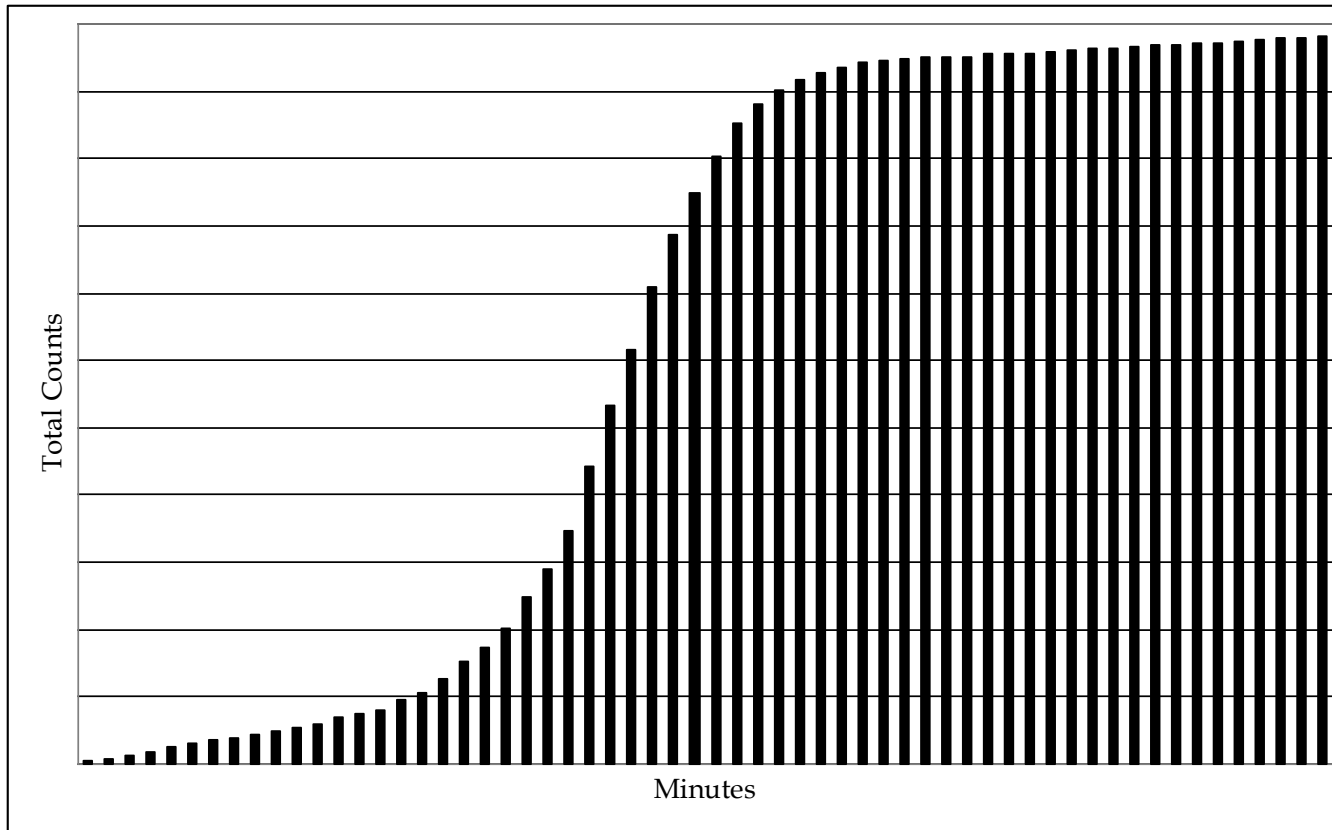
# Dynamic Alpha Particle Source

## Puff Release Data (Activity)



# Dynamic Alpha Particle Source

## Puff Release Data (Integrated Total Counts)



# Dynamic Alpha Particle Source

---

Questions?