Use of Automotive Air Filters to Determine the Extent and Severity of a Nuclear Terrorist Attack

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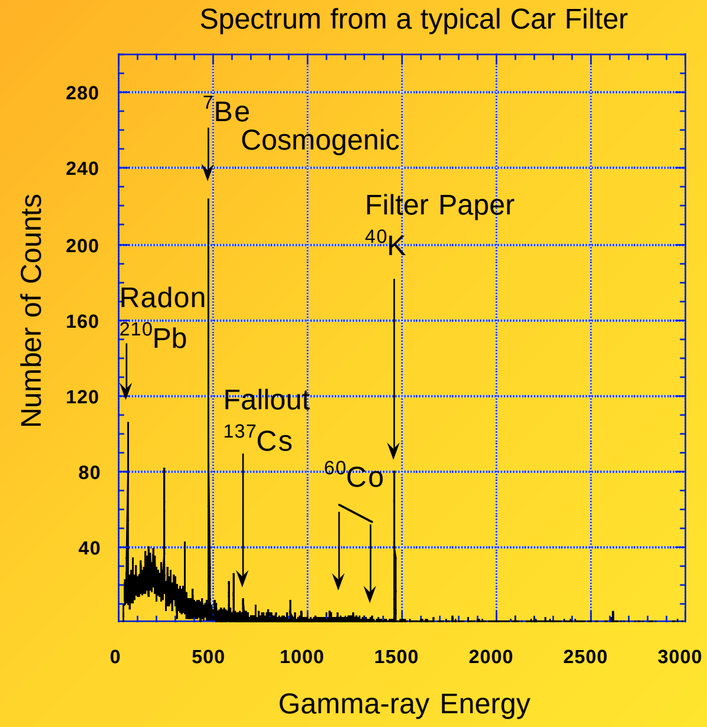
Following the 9/11/2001 terrorist attack on the World Trade Center, the people of the United States have become aware of their vulnerability in the ongoing war of terror. Besides the fear from conventional weapons, even greater fear comes from the threats of mass destruction associated with nuclear, chemical, or biological weapons, as evidenced by the anthrax attack on the United States Senate. There is an urgent need to establish collection and analysis facilities around the country to respond to future attacks and to quickly and accurately determine the extent and severity of such an attack.

This poster addresses the nuclear threat using common automotive air filters as the sample collectors and existing facilities for analysis.

Public Service Vehicles are excellent collectors since they typically are concentrated in population centers and are driven in well-documented patterns. Police departments will be the first response teams.

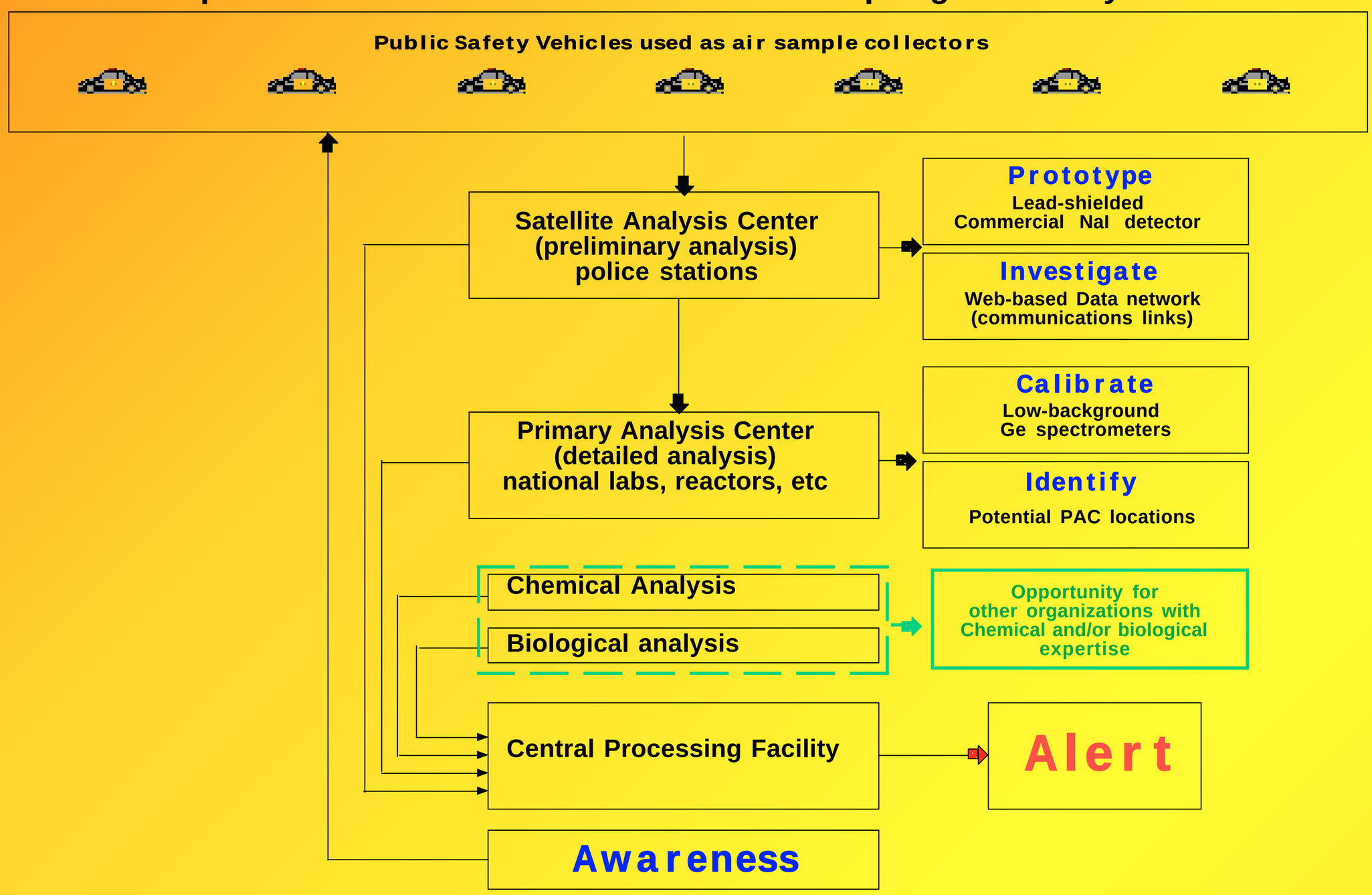
Hundreds of Lead-shielded gamma-ray spectrometers exist at universities national laboratories, and reactor facilities. These facilities can serve as Primary Analysis Centers. Standard calibration samples can be provided to guarantee uniformity of analysis.



The spectrum from automotive filters is identical to that from dedicated air samplers. The 14:1 air to fuel mixture needed in a gasoline engine calibrates the air that passed through the filter.

150 automotive air filters have been examined here at our Low-Background Facility. Observation of the naturally occurring Be-7 and Pb-210 verify the performance of these filters and demonstrate the extreme sensitivity of this method. Activities expected from a terrorist attack would be orders of magnitude greater than these naturally-occurring activities.

Proposal for a National Network of Air Sampling and Analysis



Conclusion: A National Network of Air Sampling and Analysis centers can be established utilizing Public Service Vehicle air filters as sample collectors and existing laboratory facilities for analysis to determine the extent and severity of a radiological terror attack. A pilot of this system could be established in ten metropolitan areas in a matter of months.

Following an attack, every car on the road is a mobile air sample collector!