

# Establishing a UK primary standard for radioactive aerosols.

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## Introduction

- Specific aims of project
- Background
- Measurement of radioactive aerosol
- Measurement problems
- Possible solutions
- Candidate aerosols
- Aerosol generation techniques
- Test facility
- Conclusion



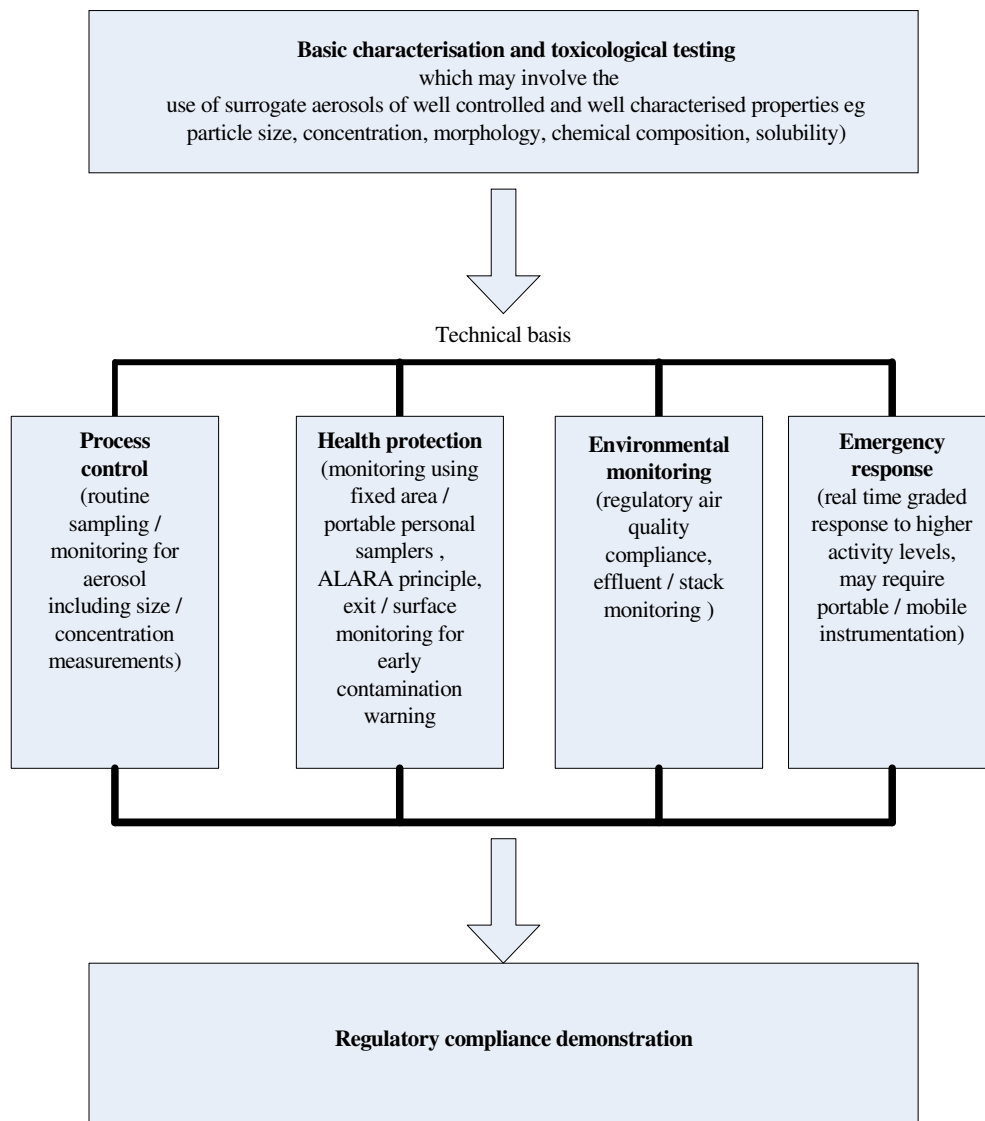
### A report on:

- What the industry requires – by consultation with manufacturers and users
- What the solution could be – suggestions
- How it can be produced – practical plans
- Expected costs – price of setting up options / business opportunities

- Stack / area monitoring for regulatory compliance
- Accurate alpha determination in the presence of Radon

***Often in a challenging measurement environment***

# Measurement of radioactive aerosol

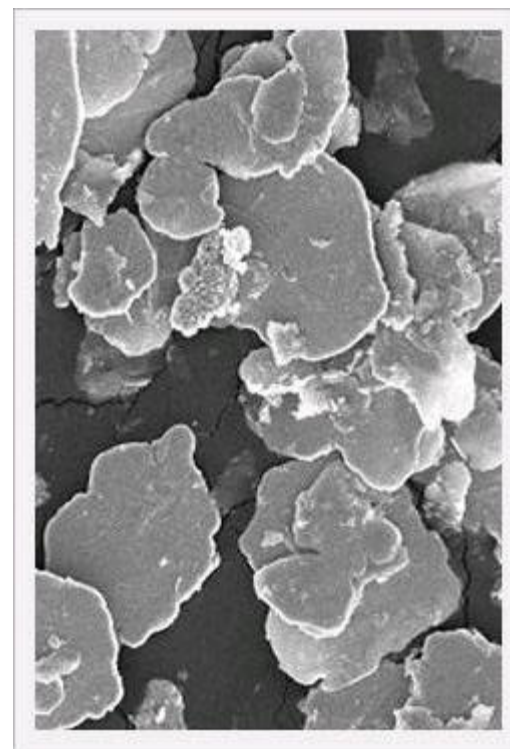


Radioactive Aerosols –  
M D Hoover and G J  
Newton, chapter 35,  
aerosol Measurement:  
Principle and  
techniques and  
applications

## Measurement of radioactive aerosol

### Considerations

- Type and size of particulate collected
- Degree of dust loading
- Type of filter used
- Detection efficiency of filter / instrument
- Radon?
- Real time / integrated measurement
- Calibration



## Measurement problems

- Degradation of spectra due to dust loading
- Radon compensation
- Link calibration source to filter; measured
- Monitor positioning

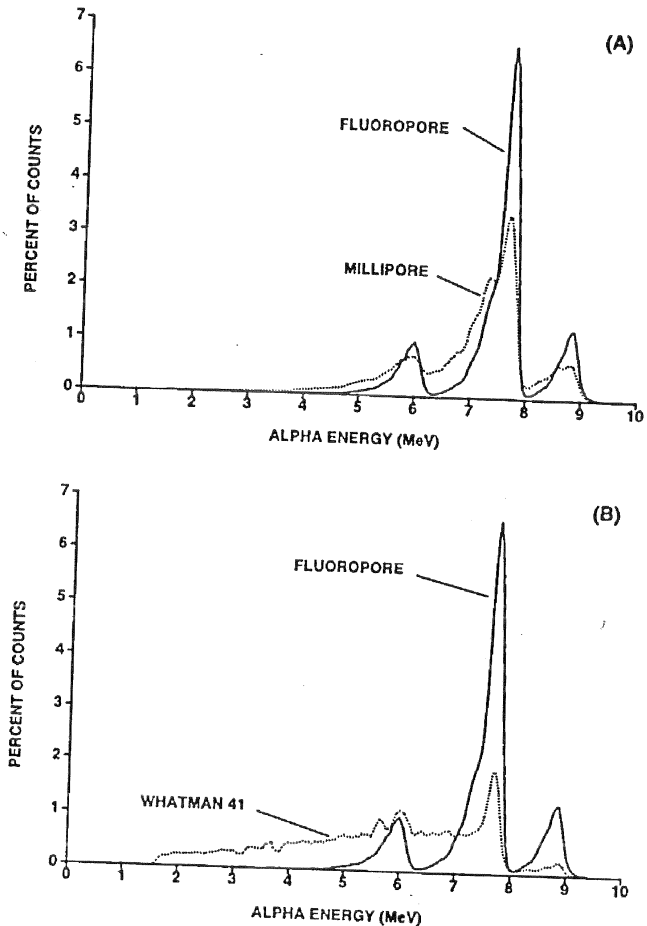
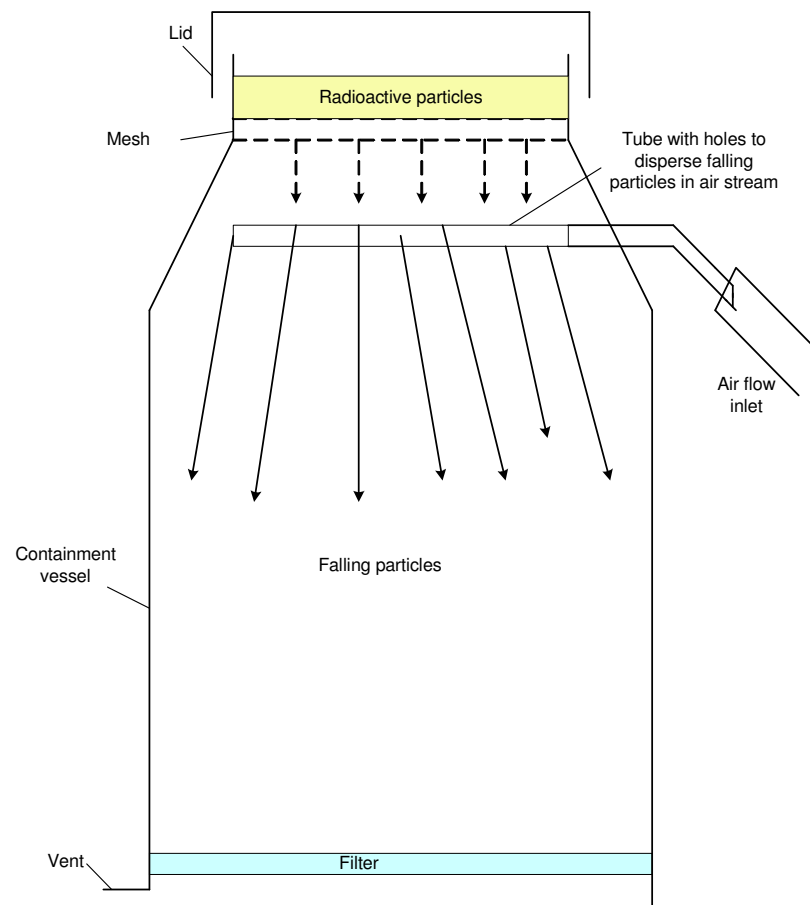


FIGURE 35-10. Illustration of the Influence of Filter Type on the Quality of the Radon Progeny Energy Spectrum in an Alpha Continuous Air Monitor. The Fluoropore Filter Provides Superior Resolution.

## Possible solutions

- Production of spiked aerosol
- Production of filters of known activity
- Instrument exposure facility
- Production of radon for compensation testing.



## Requirements

- Physical properties of aerosol (size, shape, chemically non toxic, insoluble, stable) – **importance of particles of uniform size?**
- Radionuclides of interest and activity levels required

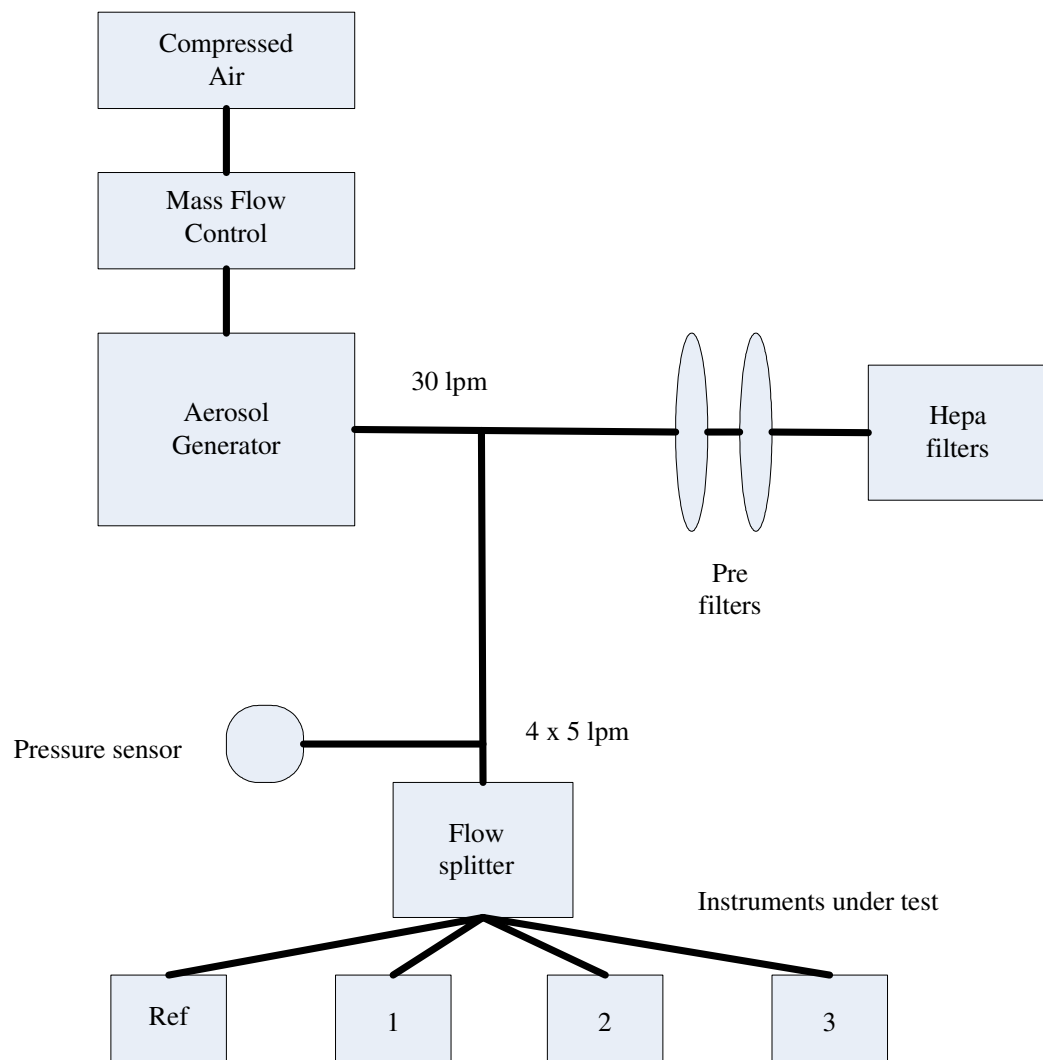
## Particulate

- Radioactivity associated with / carried on montmorillonite clay, methylmethacrylate (Perspex), polystyrene from chloride solution, chelation process – synthetic glass / sand

# Aerosol generation techniques

- Spinning disk generator
- Compressed air nebulisers
- Ultrasonic nebulisers
- Fluidised bed





More information required on

- effect of filter type
- effect of dust loading
- particle size distribution
- calibration of instruments

Before a facility could be developed to support UK user community

## Possible PhD project??

## Rolling Programme Formulation Ideas for future NMS funded projects

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**Thank you**

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