PROJECT EVALUATION REPORT

PROJECT TITLE - HOT PARTICLES IN THE TERRESTRIAL FOOD CHAIN: SOURCES, CHARACTERISATION AND RADIOLOGICAL IMPLICATIONS

CONTRACTOR:	Westlakes Research Institute		
File Number	NE 2215	COMRAD Number	RP 0420
Duration:	Jan 95 - June 96	Total Cost:	£58k
Project Leader	Dr Paul McDonald	Project Officer	Paul Tossell

Objectives

(i) a literature review regarding emissions and properties of hot particles; and,

(ii) an experimental stage studying hot particles from around the Sellafield site. This covered their abundance in the local terrestrial environment and their properties (mineralogical and radiological). The study looked at their availability to enter the food chain, either via ingestion or inhalation, and make an assessment of hot particle content of food items.

Overall, this project looked at the radiological significance of hot particles to local food consumers around the Sellafield site.

Approach

Solid state alpha-track detectors were used to spot hot particles. Clusters formed on the plates allowed estimates of the activity to be made from their size, taking into account length of exposure.

Samples of grass and soil were taken early last year from sites around the Sellafield site that were considered representative of the whole area. These sites were carefully selected and has remained undisturbed for some time. Samples were also taken from a local wood. Vegetable plots were started close to the perimeter to control certain growth parameters. A 'frisbee' was used to differentiate between recent and long-term depositions. Blackberries were collected from near the site. A cow's stomach was to have been used but CVL couldn't find it in their stores.

Outcome

The literature review makes good reading. It is not included in the final report as it was issued last year as a stand-alone report. It is on file if you wish to read it.

The experimental section provided 2 positives (both on grass) out of 381 exposures, for over 100 samples. One of these positives is probably of natural origin.

Particle sizes are such that inhalation is not considered a problem. Since the positives are from grass it is possible they could be consumed by animals and then indirectly consumed by humans. However, the dose calculations, even in theoretical worse case scenarios, indicate that the radiological significance is negligible.

Performance of the contractor

They were willing to change the project according to the project officer's requests. The work was thorough. Overall the project was well handled.

Value for money

The value for money to the Ministry comes in what this project saves for the future. Since hot particles have been shown to be of no significance they do not need to be studied in a further detail.

Benefit to MAFF/End use of results

As I mentioned above MAFF does not to proceed with work on hot particles in foods from around the Sellafield site, and therefore implicitly from around other sites.

A paper has been prepared that will be sent to a peer-reviewed journal shortly. This will show that hot particles do not need to be considered in any further depth as part of TRAMP or FARM.

Conclusions

This project has shown that hot particles are not of concern to the UK food supply at present. There is no indication that we should be concerned in any form with UK produced goods.

Paul Tossell
12th November 1996