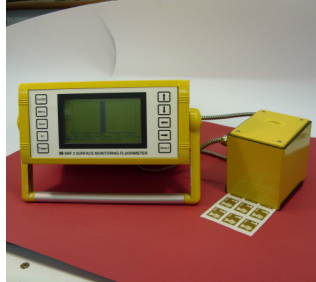
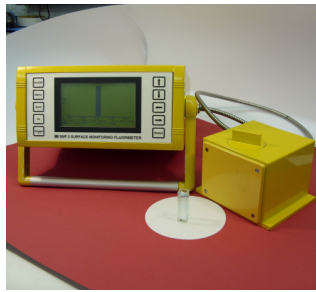


# Fluorescence Monitoring Instruments



The **SMF 2-LSP** (Liquid Sampling Probe) uses conventional optical geometry to measure the fluorescence of solutions in standard 1 cm cells. However, the compact size and battery based operation allow the instrument to be used in the field to make measurements that, until now, required large laboratory spectrometers.

This portability then allows the user to make measurements at the point where the sample is taken and hence take immediate action on the results.

Applications of the SMF 2 LSP include, for example:

- measurement of tryptophan and other biomarkers in river and water treatment plant studies
- measurement of industrial pollutants in rivers and sewage works
- measurement of materials swabbed from surfaces in industrial hygiene studies
- fluorescent tracer measurement
- identification of unknown materials in landfills and fly tipping

We are proud to announce that the SMF 2-LSP received the Silver Award from the European Environmental Press for innovative environmental technology at Pollutec 2003.

The **SMF 2 - SMP** (Surface Monitoring Probe) is a direct reading spectrofluorimeter which uses short wavelength UV to excite materials of interest on surfaces and detects the resulting fluorescence. The materials efficiently detected by this technique include all fluorescent dyes, which may be incorporated in products as diverse as inks, polymers, oil and water, paper and domestic products, as well as naturally occurring fluorescent materials such as some pharmaceuticals and environmental pollutants.

Applications of the SMF 2 SMP include, for example:

- Simulation of toxic materials
- Security ink research
- Coating identification and measurement
- Industrial hygiene monitoring
- Cleaning monitoring
- Tracer studies

The ability to measure directly on surfaces makes the SMF 2 - SMP an optimum approach for many tasks and its portability enables the measurements to be taken on site, therefore avoiding delays caused by transit of samples to laboratory.



## **SMF3 Surface Monitoring Fluorimeter**

The SMF 3 Surface Monitoring Fluorimeter is a whole body dosimeter which is used to study the spreading and penetration characteristics of any hazardous material where quantitative measurements of skin and clothing contamination and absorption are required.

These measurements enable the spreading, accumulation and removal of contamination to be better understood. This in turn allows researchers to develop safer working practices and design more efficient clothing.

There are several applications for the SMF 3 Surface Monitoring Fluorimeter:-

- Studies involving tasks with hazmats and Chemical Warfare Agents
- Improvement in garment design to reduce contamination
- Demonstration of how contamination is acquired
- Studies of the functions of protective clothing and design of donning and doffing procedures
- Penetration studies of garments during use
- Studies of the processes of decontamination on skin and protective clothing
- Comparison of effectiveness of decontamination procedures
- Quantification of training exercise performance

The SMF 3 consists of a man sized dodecahedron of UV lights, a flash gun, a video camera and a sophisticated image processing software package running on a PC.

### **Fluorescent Chemical Technology used in the SMF3**

A fluorescent tracer is added to the material being studied or to a stimulant and personnel carry out a set task over a prescribed period. The tracer, which does not alter the physical properties of the material under study, and the material move in unison, and a quantitative measurement of the tracer on the clothing or skin can be directly related to the amount of active material present.

The SMF 3 Surface Monitoring Fluorimeter measures the selected body surface area in one operation lasting no more than 15 to 20 minutes, or quicker under set conditions.

### **Fluorescence Measurements**

The personnel to be monitored sit inside a dodecahedron of UV lights which cause the tracer to fluoresce and a video camera equipped with an appropriate filter records the fluorescence. A second image is taken using a high speed flash gun with a special filter.

### **Image and Data Processing**

The two images from the fluorescence measurement are used to resolve the curvature of the surface of the subject. This then allows precise quantitation of the tracer and hence excellent analytical accuracy. Image processing software allows part or all of the area of the image on a PC screen to be selected. This then quantifies the amount of tracer and thus the quantity of the chemical or surrogate on the person. By photographing the operative in several positions the total body contamination may be quantified. Alternatively, selected areas such as the face or hands may be quantified.