

Passive samplers a journey from a research tool to a mainstream Environmental technique.

Mark Bowkett



Current state Traditional Environmental sampling-



Form guidance EPC: Application for an environmental permit – Part C6 varying a water discharge activity

Guidance notes on Part C6 – Variation to a bespoke water discharge activity and groundwater activity point source discharges



Please read these guidance notes carefully before you fill in the forms.

You only need to give us details in this part of application for the any parts of the permit that will be affected (for example, if you are adding a new facility or making changes to existing ones).

You do not need to resend any information from your original permit application if it is not affected by your proposed changes.

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- 2 How long will you need to discharge the effluent for?
- 3 How much do you want to discharge?

- 4 Intermittent sewage discharges
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- 6 How will the effluent be treated?
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What am I applying for?

This application is to vary a bespoke water discharge activity or groundwater point source discharge activity environmental permit.

Which forms do I have to complete?

You should have already completed part C2. Now you need to fill in part C6, including any relevant appendices, once for each effluent you are applying to vary.

If you are applying for more than one activity from your site these will all form part of your single environmental permit.

What effluent or effluents are you applying for?

For each individual discharge choose your effluent type from Table 1 and complete the questions indicated in the table.

What do the effluent types cover?

- Trade effluent (known volume): including process effluents, washwaters, close circuit cooling waters, boiler blowdown, filter backwash, pumped minewater
- Trade effluent (rainfall dependent): site drainage
- Trade effluent (returned abstracted water): including fish farms, watercress farms, abstracted cooling water – also follow this category for any discharge of recirculation water arising from ground source heating and cooling schemes
- Intermittent settled storm: settled sewage from a sewage treatment works receiving combined sewage effluent
- Intermittent combined sewer overflow: storm sewage from a sewerage network or discharged at the head of a sewage treatment works
- Intermittent emergency overflow: emergency discharge from a sewage pumping station
- Treated sewage (water company): treated sewage effluent discharge from a sewage treatment works operated by a sewerage undertaker
- Domestic treated sewage (private ownership): treated domestic sewage effluent discharge from a sewage treatment works operated by a private owner or owners (see definition of 'domestic sewage' below)
- Mixed effluent (all volumes known): a mix of more than one trade effluent (known volume) or trade effluent and domestic treated sewage which share a treatment facility and common monitoring point
- Mixed effluent (with rainfall dependent element): a mix of trade effluents (known volume) or domestic treated sewage (private ownership) with trade effluent (rainfall dependent) which share a treatment facility and common monitoring point.

Definition of domestic sewage

Sewage shall be solely domestic in origin and contain no trade effluent (as defined in Section 221 of the Water Resources Act 1991). For the purpose of this guidance 'domestic sewage' means sewage from residential settlements and services that originates predominantly from the human metabolism and from household activities. This includes waste water from cooking, washing up and clothes washing at guest houses, hotels, pubs and restaurants where these relate solely to activities on those premises. For instance, sewage from a guest house preparing meals for its guests and washing its own bedding qualifies as 'domestic sewage'. Waste water from a site preparing food for consumption elsewhere or washing bedding on behalf of another person does not qualify as 'domestic sewage'.

Current state Environmental Passive sampling-

What Sampler

Preparation of
sampler

Deployment of
sampler

Retrieval of
sampler

Extraction and
analysis

Relevance of
Results to
licence

Current state Environmental Passive sampling-

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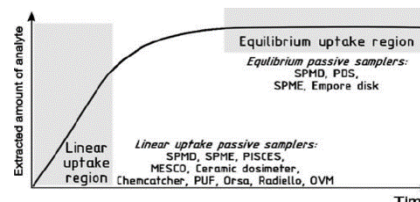
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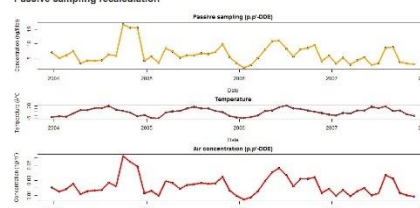
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Passive sampling recalculation



Future state Environmental Passive sampling-

Easy To Use

Future state Environmental Passive sampling-

Selection of Generic Passive sampler and passive sampler type.

How to simplify/ Co Deployments/ Multifunctional

Future state Environmental Passive sampling-

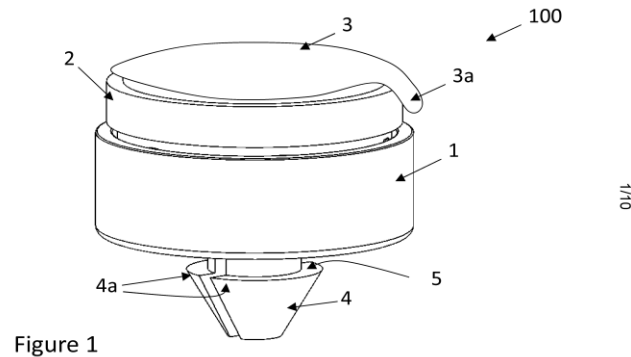
Deployment devices and deployment strategies.

Theoretical vs practical.

Fit for purpose

Future state Environmental Passive sampling-

Sampler preparation



Source: TE Laboratories Ltd: PCT/EP2017/082616

Future state Environmental Passive sampling- Field measurement

Analytical Chemistry

Article

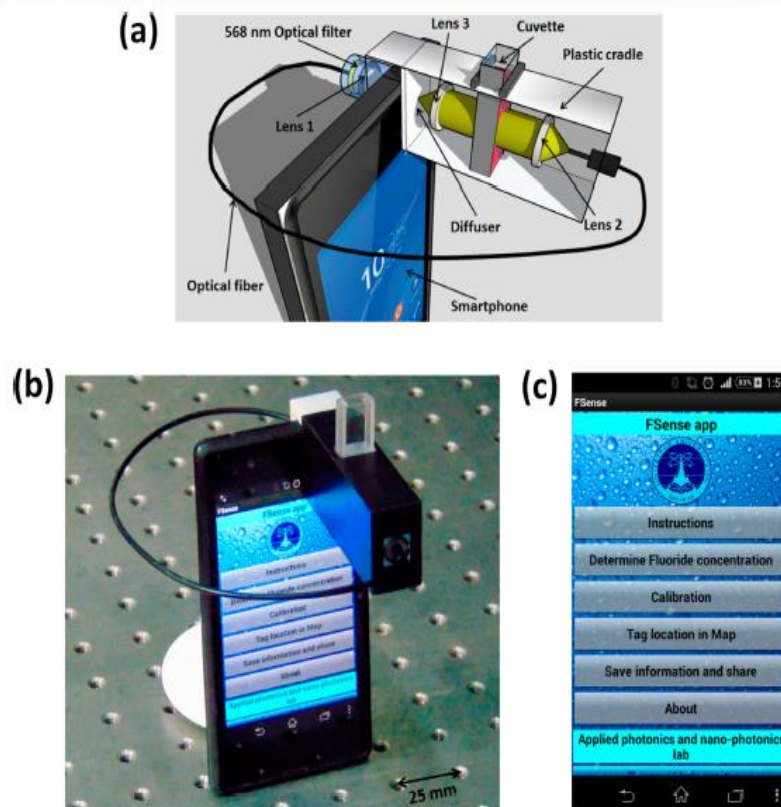


Figure 2. (a) Schematic of the smartphone based fluoride sensor; (b) photograph of the designed sensor; and (c) a screenshot image of the developed "FSense" application for the present sensor.

Source: Analytical chemistry-Low-Cost, Robust, and Field Portable Smartphone Platform Photometric Sensor for Fluoride Level Detection in Drinking Water Iftak Hussain et al

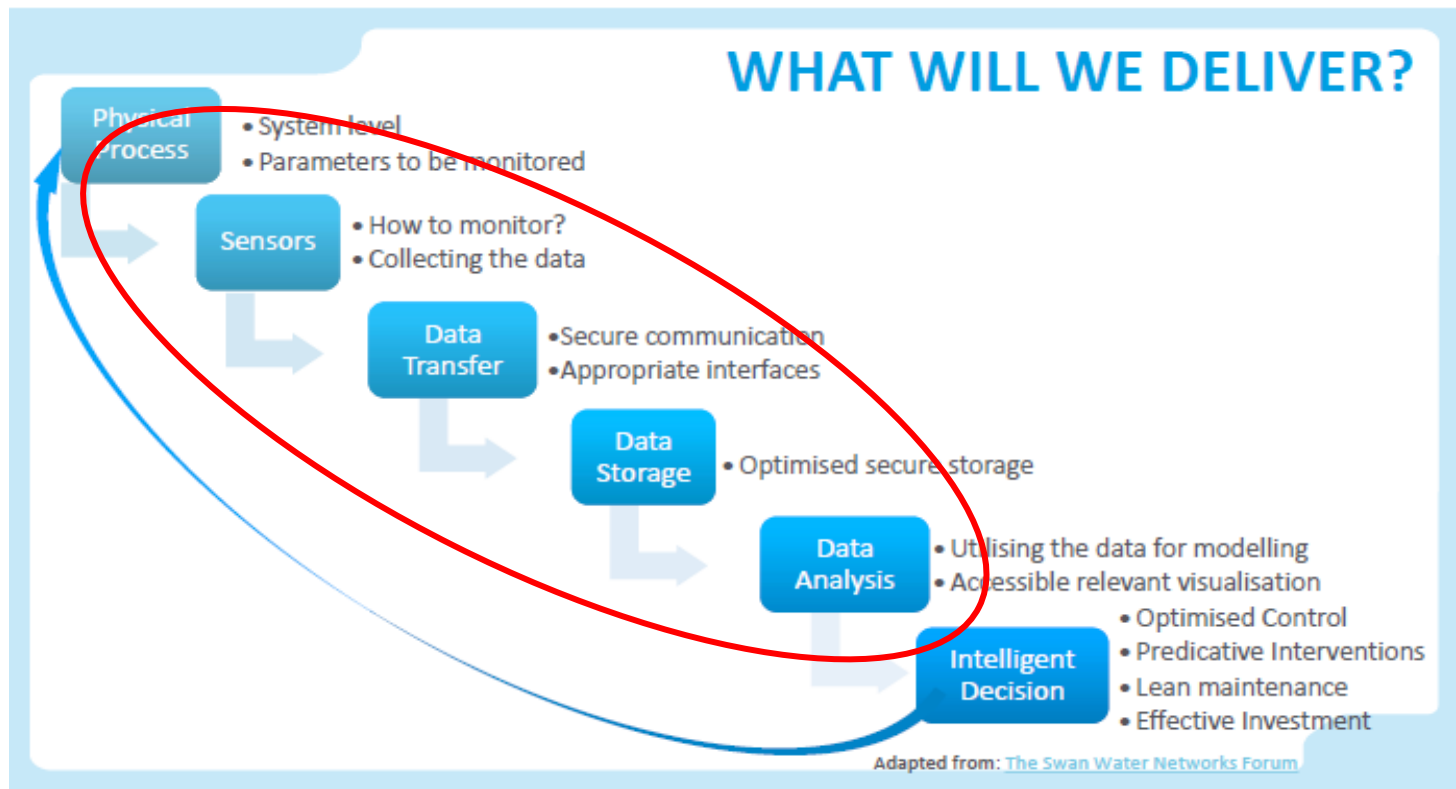
Future state Environmental Passive sampling-

Data Handling and getting value from results;



Future state Environmental Passive sampling-

Data Handling and getting value from results;



Source: Martin Kane Chief Engineer Severn Trent Water

Future state Environmental Passive sampling-

Expansion of the capability – Main research focus

Ease of use – Barrier to more widespread use

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