

# USING PASSIVE SAMPLERS

at Contaminated Sediment Superfund Sites

A cost-effective and scientifically robust method to measure contaminant concentrations in aquatic systems

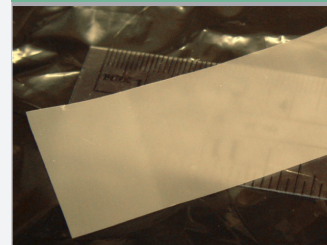
## WHY USE PASSIVE SAMPLERS?

- Improve accuracy and precision of measuring freely dissolved concentrations
- Assess bioavailability and risk to benthic organisms
- Reduce uncertainty in eco-risk assessment
- Delineate Exposure Units, Decisions Units, or Sediment Management Units
- Assess remedy effectiveness and monitor risk reduction
- Target hydrophobic organic contaminants, such as PCBs, PAHs, dioxins, furans, and chlorinated pesticides

## WHAT DO PASSIVE SAMPLERS DO?

- Measure freely dissolved concentrations (i.e., bioavailable) of contaminants in aquatic systems
- Collect time integrated, average samples that account for variations in concentrations
- May serve as surrogate for organism bioaccumulation
- Applications in water column and sediment interstitial waters

## TYPES OF PASSIVE SAMPLERS



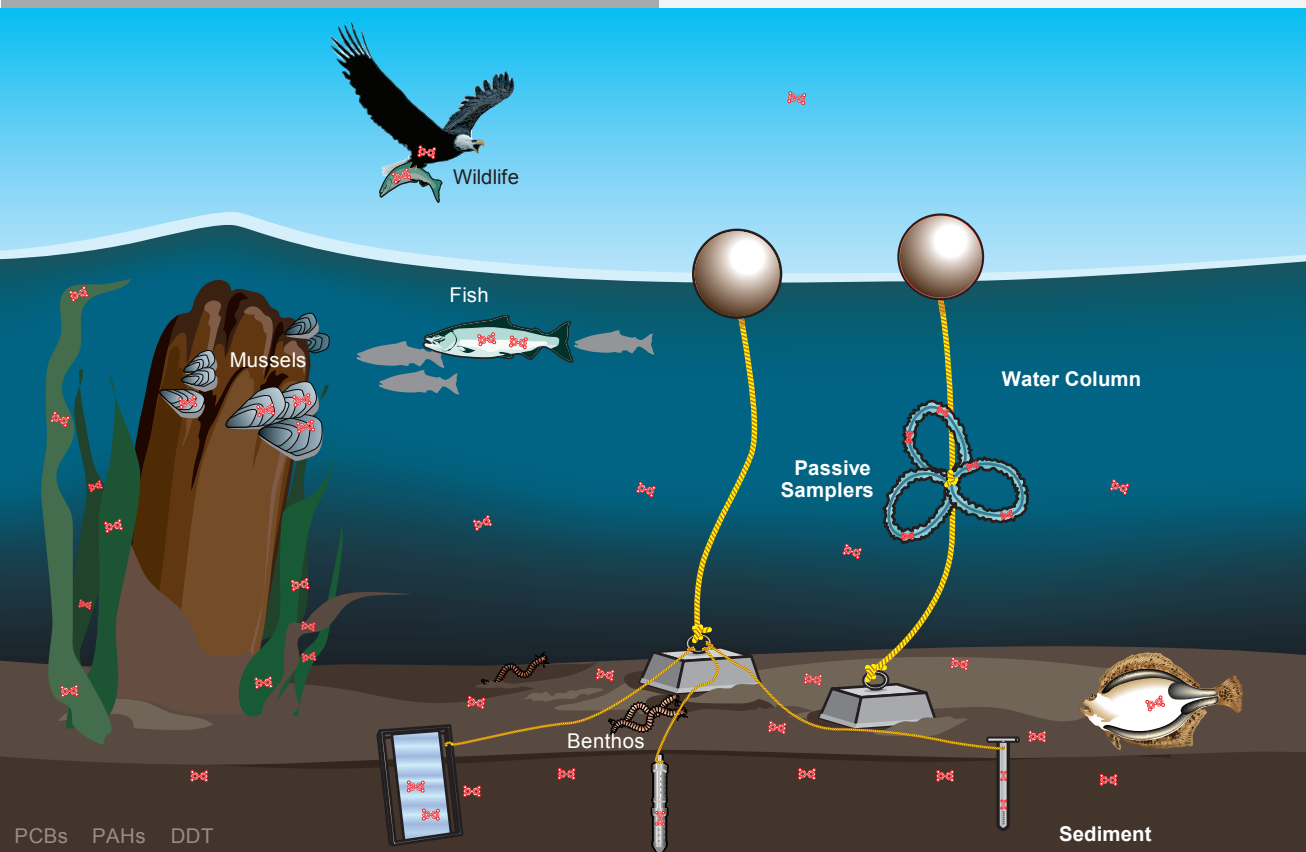
POLYOXYMETHYLENE (POM)



LOW DENSITY POLYETHYLENE (LDPE)

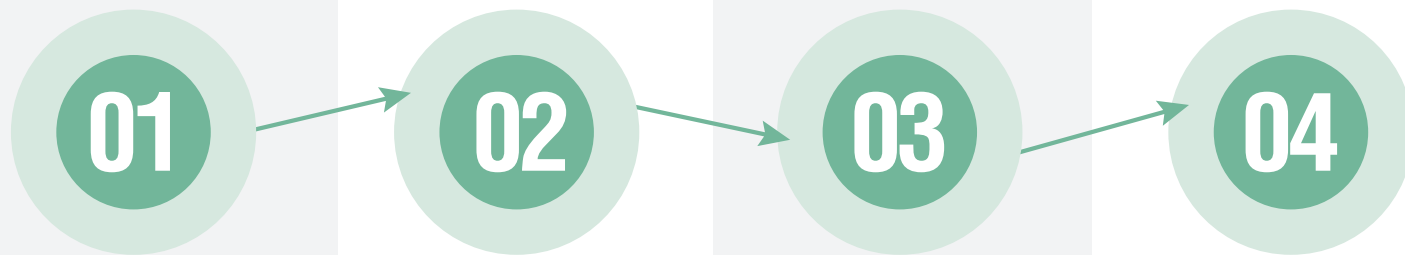


SOLID PHASE MICROEXTRACTION (SPME)



Deployment of Passive Samplers in Aquatic Systems

# HOW DO PASSIVE SAMPLERS WORK?



## PREPARE

Samplers are cleaned and sealed in clean containers until deployment.

## DEPLOY

Contaminants partition into polymer until equilibrium with the environmental media is achieved.

## RECOVER

Samplers are recovered, cleaned, and submitted to laboratory for analysis.

## ANALYZE

Laboratory conducts chemical analysis of sampler. Dissolved contaminant concentrations in adjacent media are calculated.

## CONTAMINANT CONCENTRATIONS IN PASSIVE SAMPLER OVER TIME

