

## Air Quality Monitoring in the Petrochemical Industry

### Radiello® passive air samplers for trusted results



#### Features and Benefits

- No sampling pump required
- Low detection limits, high uptake rates and high capacity allows for sampling time ranges from 15 min. to 30 days (1 ppb–1000 ppm)
- Greater adsorbent capacity offers minimal reverse diffusion and greater uptake rate consistency resulting in more reproducible results
- Radial design gives high and consistent sampling rates
- Proven performance for sampling in petrochemical environments<sup>1</sup>

The petrochemical industry requires a variety of air monitoring devices to measure emissions from manufacturing operations and to assess employee exposure risk to hazardous chemicals such as benzene, toluene, ethylbenzene, xylene (BTEX) and volatile organic compounds (VOCs); hydrogen sulfide, nitrogen dioxide and sulfur dioxide. It is known that benzene is a highly carcinogenic gas and hydrogen sulfide is a strong chemical asphyxiant.

Employees who work in this industry are at risk of exposure to chemical compounds that are detrimental to health and safety. Communities may also assume similar risks at times of environmental crisis such as oil spills.<sup>2</sup> or fugitive emissions from the wide range of petrochemical operations and transportation processes. We offer the proven radiello® passive air sampler, with its innovative radial design, for accurate measurement of low levels of these contaminants.

Method	Contaminants of Interest	Sampling Media
<b>OSHA</b>		
OSHA 5000 / 5001	Organic Vapors	Passive Sampling – radiello BTEX/VOC (RAD130)
OSHA 12	Benzene	Passive Sampling – radiello BTEX/VOC (RAD130)
OSHA 83	2-Butoxyethanol	Passive Sampling – radiello BTEX/VOC (RAD130)
OSHA 111	Toluene	Passive Sampling – radiello BTEX/VOCs (RAD130 / RAD145)
OSHA 1002	Xylenes/Ethylbenzene	Passive Sampling – radiello BTEX/VOCs (RAD130 / RAD145)
OSHA 1005	Benzene	Passive Sampling – radiello BTEX/VOCs (RAD130 / RAD145)
OSHA 1007	Formaldehyde	Passive Sampling – radiello DNPH (RAD165)
OSHA 1008	Hydrogen Sulfide	Passive Sampling – radiello H <sub>2</sub> S (RAD170)

To learn more about the radiello® passive sampler and our other air monitoring products, visit [SigmaAldrich.com/radiello](http://SigmaAldrich.com/radiello)

Method	Contaminants of Interest	Sampling Media
OSHA 1011	Sulfur Dioxide	Passive Sampling – radiello HF/NO <sub>2</sub> /SO <sub>2</sub> (RAD166)
OSHA ID 110	Fluorides (F and HF)	Passive Sampling – radiello HF/NO <sub>2</sub> /SO <sub>2</sub> (RAD166)
<b>NIOSH</b>		
NIOSH 1501	Aromatic Hydrocarbons	Passive Sampling – radiello BTEX/VOC (RAD130)
NIOSH 2541	Formaldehyde by GC	Passive Sampling – radiello Aldehydes (RAD165)
NIOSH 3700	Benzene by Portable GC	Passive Sampling – radiello BTEX/VOC (RAD130)
NIOSH 6013	Hydrogen Sulfide	Passive Sampling – radiello H <sub>2</sub> S (RAD170)
<b>ASTM</b>		
ASTM D3686	Organic Vapors	Passive Sampling – radiello BTEX/VOC (RAD130)
ASTM D6196	Volatile Organic Compounds (VOCs)	Passive Sampling – radiello BTEX/VOC (RAD145)
<b>EPA</b>		
EPA TO-15	Toxic Organic Compounds in Ambient Air	Passive Sampling – radiello BTEX/VOCs (RAD130 / RAD145)
EPA TO-17	Polar and non-polar VOCs, select aldehydes	Passive Sampling – radiello BTEX/VOCs (RAD130 / RAD145)

## References

- Center for Toxicology and Environmental Health (CTEH): MC 252 Oil Spill Air Sampling and Analysis Plan, May 2010
- Nicholas P. Cheremisinoff, Anton Davletshin, *Emergency Response Management of Offshore Oil Spills: Guidelines for Emergency Responders*, John Wiley & Sons, 2010

## Trial Size radiello® Starter Kits

### Each kit contains:

- 2 adsorbent cartridges
- 1 diffusive body
- 1 triangular support plate with barcode labels, label clip, and vertical adapter



Description	Qty.	Cat. No.
<b>Hydrogen Sulfide for Visible Spectrometry</b>	1 kit	RAD170S
<b>Kit includes:</b>		
Cartridge Microporous PE Impregnated with Zinc Acetate		
Vertical Adapter		
Triangular Baseplate		
White Diffusive Body		
<b>VOC/BTEX for Chemical Desorption</b>	1 kit	RAD130S
<b>Kit includes:</b>		
Cartridge with Charcoal		
Vertical Adapter		
Triangular Baseplate		
White Diffusive Body		

Description	Qty.	Cat. No.
<b>VOC/BTEX for Thermal Desorption</b>	1 kit	RAD145S
<b>Kit includes:</b>		
Cartridge with Carbograph		
Vertical Adapter		
Triangular Baseplate		
Yellow Diffusive Body		
<b>1,3-Butadiene and Isoprene for Thermal Desorption</b>	1 kit	RAD141S
<b>Kit includes:</b>		
Cartridge with Carbopack™ X		
Vertical Adapter		
Triangular Baseplate		
Yellow Diffusive Body		

For more information, visit

[SigmaAldrich.com/Petrochem-AQM](https://SigmaAldrich.com/Petrochem-AQM)

## To place an order or receive technical assistance

Order/Customer Service: [SigmaAldrich.com/order](https://SigmaAldrich.com/order)  
 Technical Service: [SigmaAldrich.com/techservice](https://SigmaAldrich.com/techservice)  
 Safety-related Information: [SigmaAldrich.com/safetycenter](https://SigmaAldrich.com/safetycenter)

[SigmaAldrich.com](https://SigmaAldrich.com)

Merck KGaA  
 Frankfurter Strasse 250  
 64293 Darmstadt, Germany

