SAMPLING SOLUTIONS

For Agriculture

Recognition

Agriculture is one of the most hazardous industries because of the use of chemicals in pesticides and fertilizers and other agents that expose workers to respiratory hazards.[1] In the U.S., agriculture is responsible for 75% of pesticide use, putting workers at high risk for exposure to dangerous levels of pesticides whether or not they work with them directly.[2] Poultry farming presents its own particular respiratory hazards, in such forms as dust, fertilizers, pesticides, and other chemical agents.

The chemical agents used in this type of industry present a hazard to applicators, harvesters reentering a sprayed field, family members due to take-home contamination, and rural residents via air, ground water, and food. Workers may be exposed in a variety of ways:

- Working in a field where pesticides are recently applied
- Breathing in the chemicals' "drift" from adjoining nearby fields
- Working in a treated field without appropriate PPE
- Eating: with contaminated hands, contaminated produce, and/or in a contaminated area [3]

SKC offers active and passive sampling solutions for some compounds present in fertilizers, pesticides, poultry farming/processing, and food additives. SKC active samplers require an air sample pump to collect hazardous gases and vapors in air; passive samplers collect hazardous vapors by diffusion without the use of an air sample pump.

See the SKC equipment recommended for:

- Fertilizers (ammonia and nitrogen dioxide)
- Pesticides (organotin, organophosphorus, and organochlorine)
- Poultry farm (peracetic acid)
- Food additives (diacetyl, 2,3-pentanedione)
- Food additives (diacetyl, 2,3-pentanedione)

Evaluation with SKC Sampling Solutions

For over 60 years, SKC has led the research, design, and manufacture of quality sampling equipment and media to aid health and safety professionals in the evaluation of occupational and environmental hazards.

Choose from the SKC sampling solutions for ventilation studies, which feature an array of innovative portable instruments.

See reverse side for testing equipment for various applications.

Notice: This publication is intended for general information only and should not be used as a substitute for reviewing applicable government regulations, equipment operating instructions, or legal standards. The information contained in this document should not be construed as legal advice or opinion nor as a final authority on legal or regulatory procedures.

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Sample Collection

Active Air Sampling Solutions

Note: When using a sorbent tube with an AirChek Touch Series pump, a low flow tube holder is required.

Target Compound	Select Methods *	SKC Sample Collection Media and Cat. No.	SKC Sample Pump and Cat. No.	Notes
Ammonia	NIOSH 6015 NIOSH 6016	Sorbent tube 226-10-06 with optional preloaded filter cassette 225-3-01	Pocket Pump TOUCH 220-1000TC or AirChek TOUCH, Essential, Essential+, Connect	Filter may be used to remove particulate interferences.
Diacetyl	OSHA 1012 NIOSH 2558	Sorbent tube 226-183	Pocket Pump TOUCH 220-1000TC	
Hydrogen peroxide	OSHA 1019	Preloaded coated filter cassette 225-9030	AirChek TOUCH, Essential, Essential+, Connect	
Nitrogen dioxide	NIOSH 6014 OSHA ID 182	Sorbent tube 226-40-02	Pocket Pump TOUCH 220-1000TC or AirChek TOUCH, Essential, Essential+, Connect	
2,3-Pentanedione	OSHA 1016	Sorbent tube 226-183	Pocket Pump TOUCH 220-1000TC	
Peracetic acid (PAA)	OSHA PV2321	Preloaded coated filter cassette 225-9037	AirChek TOUCH, Essential, Essential+, Connect	*See OSHA PV2321, p. 5 for more details*
	Non 57	Preloaded coated filter cassette 225-9030 with sorbent tube 226-193-UC or 226-199-UC	AirChek TOUCH, Essential, Essential+, Connect	
Pesticides: (Chlorpyrifos, Dichorvos, Diazinon, Malathion, Parathion, Chlordane, Pyrethrum, Aldicarb)	OSHA 62 OSHA 67 OSHA 70 OSHA 74	OVS tube 226-30-16	AirChek TOUCH, Essential, Essential+, Connect Pocket Pump TOUCH 220-1000TC	

* Other methods may apply. SKC recommends those listed.

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Sample Collection (Cont)

Active Air Sampling Solutions (Cont)

Target Compound	Select Methods*	SKC Sample Collection Media and Cat. No.	SKC Sample Pump and Cat. No.	Notes
Organophosphorus and Organonitrogen Pesticides	NIOSH 5600 NIOSH 5601	OVS tube 226-58	AirChek TOUCH, Essential, Essential+, Connect Pocket Pump TOUCH 220-1000TC	
Pesticides: Polychorinated Bisphenyls (PCBs), Organochlorine pesticides	ASTM D4861 EPA IP-8	Low-volume PUF tube 226-92	Leland Legacy® 100-3002	
PCBs, Pesticides	EPA TO-4A	High-volume PUF tube 226-131 and Quartz filter 225-1808		

* Other methods may apply. SKC recommends those listed.

Passive Air Sampling Solutions

Target Compound	Select Methods*/ SKC Validation	SKC Sample Collection Media and Cat. No.	Notes
Ammonia	Research Report 1885 (Based on OSHA ID 188 and NIOSH 6016 methods	UME^X 300 500-300	Solvent extraction and ion chromatography with conductivity detection
Nitrogen dioxide	Research Report 1789 (Based on OSHA ID 182)	UME^X 200 500-200	Solvent extraction and ion chromatography with conductivity detection

* Other methods may apply. SKC recommends those listed.

References:

[1] cdc.gov/niosh/topics/aginjury

[2] Calvert, G., et al., "Acute pesticide poisoning among agricultural workers in the United States, 1998-2005," American Journal of Industrial Medicine 51(12), pp. 883-898, doi:10.1002/ajim.20623

[3] https://www.osha.gov/agricultural-operations/hazards

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