

# 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.<sup>1</sup> 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.<sup>2</sup> Poultry farming presents its own particular respiratory hazards, in such forms as dust, fertilizers, pesticides, and other chemical agents.<sup>3</sup>

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<sup>4</sup>

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)
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### Evaluation with SKC Sampling Solutions

For over 50 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.

[www.skcinc.com](http://www.skcinc.com)  
SKC Inc.  
724-941-9701

SKC South  
434-352-7149

SKC West  
714-992-2780

## Sample Collection

### Active Air Sampling Solutions

Target Compound	Select Methods*	SKC Sample Collection Media and Cat. No.	SKC Sample Pump and Cat. No.	Notes
Ammonia	<a href="#">NIOSH 6015</a> <a href="#">NIOSH 6016</a>	Sorbent tube <a href="#">226-10-06</a> with optional preloaded filter cassette <a href="#">225-3-01</a>	<a href="#">Pocket Pump TOUCH</a> 220-1000TC or <a href="#">AirChek® TOUCH</a> 220-5000TC	Filter may be used to remove particulate interferences.
Diacetyl	<a href="#">OSHA 1012</a> <a href="#">NIOSH 2558</a>	Sorbent tube <a href="#">226-183</a>	<a href="#">Pocket Pump TOUCH</a> 220-1000TC	
Hydrogen peroxide	<a href="#">OSHA 1019</a>	Preloaded coated filter cassette <a href="#">225-9030</a>	<a href="#">AirChek TOUCH</a> 220-5000TC	
Nitrogen dioxide	<a href="#">NIOSH 6014</a> <a href="#">OSHA ID 182</a>	Sorbent tube <a href="#">226-40-02</a>	<a href="#">Pocket Pump TOUCH</a> 220-1000TC or <a href="#">AirChek TOUCH</a> 220-5000TC	
2,3-Pentanedione	<a href="#">OSHA 1016</a>	Sorbent tube <a href="#">226-183</a>	<a href="#">Pocket Pump TOUCH</a> 220-1000TC	
Peracetic acid (PAA)	<a href="#">OSHA PV2321</a>	Preloaded coated filter cassette <a href="#">225-9037</a>	<a href="#">AirChek TOUCH</a> 220-5000TC	
Pesticides: (Chlorpyrifos, Dichorvos, Diazinon, Malathion, Parathion, Chlordane, Pyrethrum, Aldicarb)	<a href="#">OSHA 62</a> <a href="#">OSHA 67</a> <a href="#">OSHA 70</a> <a href="#">OSHA 74</a>	OVS tube <a href="#">226-30-16</a>	<a href="#">AirChek TOUCH</a> 220-5000TC <a href="#">Pocket Pump TOUCH</a> 220-1000TC	
Organophosphorus and Organonitrogen Pesticides	<a href="#">NIOSH 5600</a> <a href="#">NIOSH 5601</a>	OVS tube <a href="#">226-58</a>	<a href="#">AirChek TOUCH</a> 220-5000TC <a href="#">Pocket Pump TOUCH</a> 220-1000TC	

\* Other methods may apply. SKC recommends those listed.

## 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
Pesticides: Polychlorinated Bisphenyls (PCBs), Organochlorine pesticides	<a href="#">ASTM D4861</a> <a href="#">EPA IP-8</a>	Low-volume PUF tube <a href="#">226-92</a>	<a href="#">Leland</a> <a href="#">Legacy</a> <sup>®</sup> 100-3002	
PCBs, Pesticides	<a href="#">EPA TO-4A</a>	High-volume PUF tube <a href="#">226-131</a> and Quartz filter <a href="#">225-1808</a>		

\* 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	<a href="#">Research Report 1885</a> (Based on OSHA ID 188 and NIOSH 6016 methods)	UMEX 300 <a href="#">500-300</a>	Solvent extraction and ion chromatography with conductivity detection
Nitrogen dioxide	<a href="#">Research Report 1789</a> (Based on OSHA ID 182)	UMEX 200 <a href="#">500-200</a>	Solvent extraction and ion chromatography with conductivity detection

\* Other methods may apply. SKC recommends those listed.

### References:

<sup>1</sup> [cdc.gov/niosh/topics/aginjury](http://cdc.gov/niosh/topics/aginjury)

<sup>2</sup> 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

<sup>3</sup> National Ag Safety Database "Respiratory Health on the Poultry Farm," [nasdonline.org/document/197/d0001/respiratory-health-on-the-poultry-farm.html](http://nasdonline.org/document/197/d0001/respiratory-health-on-the-poultry-farm.html)

<sup>4</sup> <https://www.osha.gov/agricultural-operations/hazards>

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