Harmful Contaminant Reduction in Swine Farrowing Barns
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**Objective:** Reduce worker and swine exposures to harmful contaminants in swine barns

### Background
Harmful substances are found in swine barns that affect human and swine health.

**Dust:** Respirable dust (particles smaller than 10 µm)

- CO: Carbon monoxide
- CO₂: Carbon dioxide

Contaminant levels are especially high during the winter months when windows and doors are kept closed for warmth.

### Sources
- Feed, swine, swine waste

### Measuring Method
- pDR-1200 Dust Photometer
- SKC Sampling Pump

### Intervention
- **Shaker Dust Collector** (2013)
- **Cyclone** (2014)
- **Vented Heater** (2014)

### Results
<table>
<thead>
<tr>
<th>Concern</th>
<th>Dust</th>
<th>CO</th>
<th>CO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sources</strong></td>
<td>Feed, swine, swine waste</td>
<td>Respirable dust concentrations should be below 0.23 mg/m³</td>
<td>CO concentrations should be below 25 ppm</td>
</tr>
<tr>
<td><strong>Measuring Method</strong></td>
<td>pDR-1200 Dust Photometer, SKC Sampling Pump</td>
<td>VRAE Multi Gas Monitor</td>
<td>ToxiRAE CO₂ Monitor</td>
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<tr>
<td><strong>Results</strong></td>
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<td><strong>Conclusions</strong></td>
<td>Both Shaker Dust Collector and Cyclone were effective in reducing dust concentrations. The Shaker Dust Collector was better. For added worker protection, respirator use should be considered.</td>
<td>The new vented heater significantly reduced CO concentrations compared to the L.B. White.</td>
<td>The new vented heater significantly reduced CO₂ concentrations compared to the L.B. White.</td>
</tr>
</tbody>
</table>

For more information, see: http://www.public-health.uiowa.edu/gpcah/center-projects/intervention-to-reduce-exposures-in-cafos/