Harmful Contaminant Reduction in Swine Farrowing Barns

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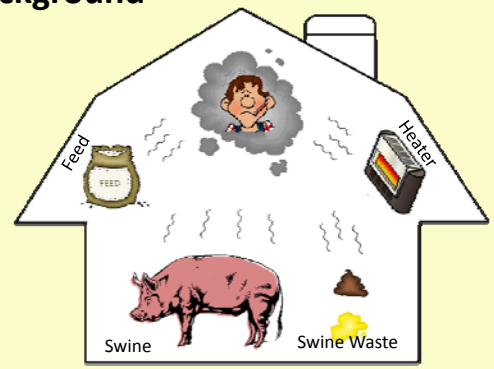
Objective: Reduce worker and swine exposures to harmful contaminants in swine barns

Background

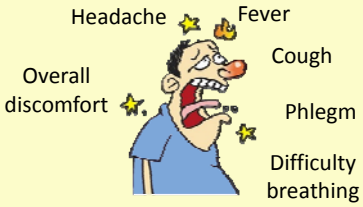


Harmful substances are found in swine barns that affect human and swine health.

Dust: Respirable dust (particles smaller than 10 µm)
CO: Carbon monoxide
CO_2: Carbon dioxide

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

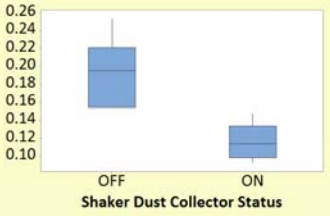
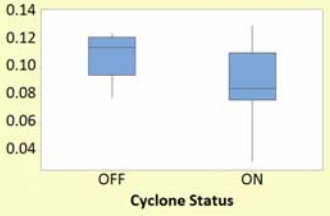
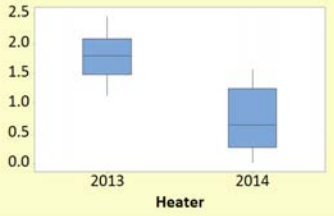
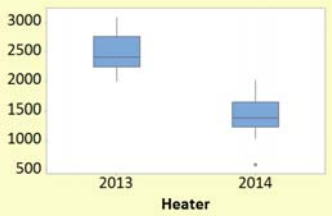
Working in swine barns can lead to health problems.



Working in swine barns over a long period of time can lead to more serious conditions.

Pig health is also affected by swine barn contaminants.

- Decreased growth rate
- Decreased litter size
- Lower survival rate

Concern	Dust	CO	CO_2
Sources	Feed, swine, swine waste	Heater	Heater, swine
Measuring Method	 pDR-1200 Dust Photometer  SKC Sampling Pump Respirable dust concentrations should be below 0.23 mg/m³	 VRAE Multi Gas Monitor CO concentrations should be below 25 ppm	 ToxiRAE CO_2 Monitor CO_2 concentrations should be below 1540 ppm
Intervention	 Shaker Dust Collector (2013)  Cyclone (2014)	 Vented Heater (2014)	 Vented Heater (2014)
Results	 		
Conclusions	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. 	The new vented heater significantly reduced CO concentrations compared to the L.B. White.	The new vented heater significantly reduced CO_2 concentrations compared to the L.B. White.

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