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# Personal Respiratory Protection Use among Confinement Workers

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# Confinement Workers Polled On Respiratory Health

M. Susan Jones (June 15, 2005). Personal Respiratory Protection Use among Confinement Workers, *National Hog Farmer*, 50, (6), E30-E31.

Agricultural workers are at increased risk for occupational illnesses and injuries, and the pork industry is no exception.

Swine confinement buildings, in particular, expose workers to hazardous gases released as manure decomposes in the storage pits and from dust created primarily from feeding practices. This environment places workers at risk for respiratory exposures and illness.

Despite the protective effects of personal respiratory protection (PRP), many swine confinement workers do not use the devices. The reasons for workers' failure to use protective gear are not well documented, however.

To help fill this void, a study was conducted to identify the variables that influence the frequency of PRP use. The study also examined the relationships of selected demographics and self-reported occupational and respiratory health histories of swine confinement workers to their use of PRP at the worksite. Funding was provided by the National Institute for Occupational

Safety and Health (NIOSH) and the Iowa Pork Producers Association.

## World Pork Expo Polls

Data was collected in the trade show area at the 2003 World Pork Expo in Des Moines, IA. To be included in the study, participants had to be 18 years of age or older, work in a swine confinement facility for at least two hours a day and be able to read and write English. Participation was voluntary.

The sample was composed of 503 swine confinement barn workers from 27 states and three Canadian provinces. Two hundred (40.6%) of the subjects were from Iowa and 52 (10.5%) were from South Dakota, so more than half of the samples were within driving distance of the event.

While the study was conducted during the World Pork Expo, it is important to recognize its limitations:

- Only workers attending the event and voluntarily participating were polled.
- All data was self-reported, thereby limited to each participant's interpretation.
- A new tool was developed for data collection. A questionnaire was used to elicit demographics and occupational and respiratory histories, and frequency of PRP use among swine confinement workers.

In addition, a PRP survey contained a rating scale developed to measure the constructs theorized to influence the frequency of respiratory protection use. Workers were also asked to indicate to

what degree specific statements or phrases represented their beliefs about using PRPs when working in swine confinement buildings.

## **What We Learned**

As one would expect, the data revealed that participants varied in age, educational level, stage of production and hours worked per week in swine confinement barns.

The majority of those completing the survey were married, white males and the principle owner or a family member of the principle owner or operator of the swine farm.

Also, the majority of the workers were employed on farms producing over 5,000 pigs annually and staffed with 1-5 additional employees (excluding family members), and reported to have worked over 14 years in swine confinement facilities. These employees reported working over 3 hours/day, more than 20 hours/week and over 6 days/week in swine confinement barns.

Few of the workers reported having received information about the need for PRP or instructions in selecting the appropriate type of protection.

Information received by the workers originated from multiple sources. Over one-fourth reported they had experienced a breathing problem they related to farming, had experienced flu-like symptoms associated with working in swine confinement buildings, and knew someone who became ill from not wearing PRP while working in that setting.

Descriptive analyses found that 36.3% of the workers never used, and 21.2% seldom used, personal respiratory protection at the worksite during the preceding year.

A statistical formula was developed to explain the frequency of PRP use. Of the variation in PRP use, 38.9% was explained by the study's variables; 12% of the variance was explained by the combination of the demographic, occupational, and respiratory history variables. An additional 27% of the variation was explained by six of the theoretical constructs — knowledge deficit barriers, external barriers, norms, severity, benefits and personal barriers.

## **More Awareness Needed**

Results of this study can serve as the basis for intervention research studies and also guide the development and dissemination of educational programs designed to promote health improvements for workers in swine confinement facilities.

The study suggests that interventions to increase PRP use should be guided by the variables of benefits, norms, severity and barriers (personal, knowledge deficit, external).

For example, because “benefits” were found to be the strongest predictor of workers' use of PRP, educational programs should focus on the positive respiratory health outcomes of wearing the protection and focus on how PRP protects the lungs.

Because “norms” were found to be a moderately strong predictor of the workers' use of PRP, programs should be designed to use social pressure in an attempt to change the workers' behaviors and incorporate the assistance of the worker's spouse, co-workers or farm owner/operator to help influence PRP use among the workers.

Since “severity” was found to be a significant predictor of PRP use, strategies should be implemented to emphasize the association of using the devices to decrease the physical, financial and emotional impact of a respiratory disorder resulting from working in a confinement unit.

Likewise, interventions to increase use of PRP will increase their likelihood of success if the interventions utilize information gained from this study about “barriers” to PRP use.

Interventions should include educating the workers about how to select, use and care for the PRP devices (removing knowledge deficit barriers), making it easier to purchase PRP and locate the devices at the worksite (eliminating external barriers), and working with manufacturers in an effort to redesign the devices so they will be more comfortable to wear at the worksite (addressing personal barriers).