



Journal of Agromedicine

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/wagr20>

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Heat Related Illness Language, Literacy and Cultural
Barriers Livestock Handling Musculoskeletal
Disorders Pesticide Exposure Respiratory Issues Safe
Tractor Operation Zoonotic Influenza Other**

Published online: 27 Jul 2010.

To cite this article: (2010) Aging and Disabled Workers Education and Outreach Heat Related Illness Language, Literacy and Cultural Barriers Livestock Handling Musculoskeletal Disorders Pesticide Exposure Respiratory Issues Safe Tractor Operation Zoonotic Influenza Other , Journal of Agromedicine, 15:3, 307-327, DOI: [10.1080/1059924X.2010.504470](https://doi.org/10.1080/1059924X.2010.504470)

To link to this article: <http://dx.doi.org/10.1080/1059924X.2010.504470>

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RESPIRATORY ISSUES

Dust and Endotoxin Exposure in Cattle Feedlot and Grain Elevator/Feed Mill Workers

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Grain elevator workers are at risk for having respiratory symptoms and airway obstruction. Concern has been raised recently regarding health effects from dust levels near cattle feedlots. Subjects were recruited at Nebraska cattle feedlots and grain elevators/ feed mills. Pre- and post-exposure spirometry was performed. Dust levels were measured during the work shift using IOM inhalable samplers. Endotoxin values in dust sample extracts were determined using a Recombinant Factor C assay along with GC/MS. A total of 33 feedlot workers and 48 grain elevator/feedmill workers were enrolled in the study (78 men, 3 women) in the summer of 2006. There was no significant difference between mean total dust exposure for feedlot workers (2.36 mg/m³, 95% CI 1.36–4.01) and for grain elevator/feed mill workers (3.46 mg/m³, 95% CI 2.03–5.89). Mean endotoxin concentration for feedlot workers was 448 EU/ m³ (95% CI 142–1420) and for grain elevator/feed mill workers was 226 EU/ m³ (95% CI 79–899), with no significant difference between groups. There was an association between pre-work shift FEF_{25–75} (p = .034) and total dust levels but not endotoxin levels. No association was found between total dust levels or endotoxin and other lung function test measures, including cross-shift lung drop in FVC, FEV₁ or FEV₁/FVC. Airway obstruction defined by GOLD criteria was noted in 12% of feedlot workers and 8% of grain elevator/feed mill workers (p = .71). In conclusion, dust and endotoxin exposure in cattle feedlots was not significantly different from that in grain elevators/feed mills, a setting where airway obstruction from occupational exposure occurs. Cattle feedlot workers may also be at risk for developing occupational airways disease.

Support: Funded by NIOSH Award 5 U50O8085-03

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ASABE Proposed Standard X607: Fan Ventilation of Confined-Space Manure Storages for Safe Entry

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The ASABE proposed standard X607 contains supporting documents and ventilation time calculations for fan ventilation of on-farm, confined space manure pits prior to entry. The draft safety standard specifies minimum fan-ventilation times and ventilation rates to reduce dangerous

gas concentrations to less than OSHA defined PELs or LVLs and to replenish oxygen concentration to greater than 20% by volume. A wide variety of confined-space manure pit sizes and shapes have been used to calculate ventilation scenarios. The draft standard specifies minimum ventilation times prior to entry for manure pits with solid, partially slotted, and totally slotted covers. Ventilation times are conservatively calculated from worst case conditions. The draft standard provides adjustments for situations where the initial gas concentrations are identified. Adjustments to ventilation times are also available for a range of ventilation fan air exchange rates and systems where ventilation air is drawn from directly above the manure pit or is ducted to the manure pit from a fresh air source with zero contaminant gas concentration and 20.4% by volume oxygen. Draft standard X607 also includes ventilation recommendations for free standing manure pits or for manure pits located directly beneath animal living quarters.

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SAFE TRACTOR OPERATION

Tractor Safety Education

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Safety education for tractor operators is an essential element in the pursuit for reduced injuries and fatalities associated with tractor use. Tractor safety education is aimed at two primary audiences, youth and adult operators. Youth training centers focus on the need to assign appropriate tasks based on age, physical abilities and emotional and intellectual maturity of the person. Since 1968, under the auspices of the US Dept. of Labor, operation of tractors by minors for persons other than their parents or guardians has been limited to individuals 16 years old or older. Youth ages 14 & 15 years old are permitted to operate tractors for non-family employers if they have successfully completed safety training provided through either a 4-H or high school vocational agriculture program. Two successful programs currently in use are the *Gearing Up for Safety* program by Purdue University that uses a multimedia (CD or online) approach and the *National Safe Tractor and Machinery Operation Program* (NSTMOP) created by a group of universities and industry partners that uses a more traditional lecture and activity approach. The use of these programs is sporadic and is a function of local conditions; i.e. availability of resources and trainers, interest in receiving training by youth, and demand for trained youth by employers. Adult education programs are developed around the OSHA 29 CFR 1928 regulations. The regulations give 9 specific training topics and require annual training for tractor operators. Many adult training programs follow a Train-the-Trainer format. This format allows safety instructors to reach a larger number of operators through training their supervisors and managers on specific safety issues and providing information on how to