

### **July: Power Take-Off (PTO) shields**

Weil, R., Mellors, P., Fiske, T., & Sorensen, J. A. (2014). A qualitative analysis of power take-off driveline shields: barriers and motivators to shield use for New York State farmers. *Journal of agricultural safety and health*, 20(1), 51–61. <https://doi.org/10.13031/jash.20.10425>

Machinery entanglements are one of the top three causes of death in farming. Education on the risks of unshielded power take-off (PTO) equipment does not appear to significantly alter farmers' willingness to replace missing or broken shielding. Different assessments conducted in various regions of the U.S. indicate that as many as one-third to one-half of PTOs are inadequately shielded. Qualitative research was conducted with New York farmers to identify the factors that influence the decision to replace damaged or missing PTO driveline shields. Interview topics included: knowledge of entanglement risks, decisions regarding safety in general, decisions relating to PTO driveline shielding specifically, and the barriers and motivators to replacing missing or broken PTO driveline shields. Interviews with 38 farmers revealed the following themes: (1) farmers are fully aware of PTO entanglement risk, (2) insufficient time and money are primary barriers to purchasing or replacing damaged or missing PTO driveline shields, (3) PTO driveline shield designs are problematic and have led to negative experiences with shielding, and (4) risk acceptance and alternate work strategies are preferred alternatives to replacing shields. Our findings indicate that more innovative approaches will be required to make PTO driveline shield use a viable and attractive choice for farmers. New shield designs that address the practical barriers farmers face, as well as the provision of logistical and financial assistance for shield replacement, may alter the decision environment sufficiently to make replacing PTO driveline shielding a more attractive option for farmers.

Tinc, P. J., & Sorensen, J. A. (2019). Marketing Farm Safety: Using Principles of Influence to Increase PTO Shielding. *Journal of agromedicine*, 24(1), 101–109.

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**Objectives:** Despite much work to reduce the frequency and severity of agricultural injuries, these events still occur. Power take-off entanglements are one example of agricultural events that can lead to death or permanent disability. This manuscript considers the use of marketing techniques to reduce agricultural injuries. Specifically, the "principles of influence" (liking, social proof, authority, consistency, reciprocity, and scarcity) are explored as methods of promoting power take-off shielding among New York farmers.

**Methods:** Focus group discussions were held with farmers and agricultural service providers in seven agricultural counties in New York. Participants were provided with background information about power take-off injuries, as well as information on one principle of influence. Facilitators then guided the groups through a brainstorming discussion to formulate intervention strategies.

**Results:** Thirty-nine individuals participated in the discussions. Participants provided feedback on individuals and organizations that could serve as influencers, potential incentives for participants, and beliefs about what would not work in their community.

**Conclusion:** Overall, participants were enthusiastic about using principles of influence to promote power take-off shielding. These methods appear to be promising for improving safety on farms, and have the potential to save both time and money compared to other intervention strategies.

Chapel, D. B., Sorensen, J. A., Tinc, P. J., Fiske, T., Wyckoff, S., Mellors, P. W., & Jenkins, P. (2015). Validation of Self-Reported Power Take-Off Shielding Using On-Site Farm Audits. *Journal of agricultural safety and health*, 21(2), 95–104. <https://doi.org/10.13031/jash.21.10724>

Despite the substantial contribution of power take-off (PTO) entanglements to workplace morbidity and mortality among agricultural workers, the degree of proper PTO shielding on U.S. farms remains poorly characterized. Sampling from the New York data of the USDA National Agricultural Statistical Service (NASS), at least 200 each of dairy, livestock, crop, fruit, and vegetable farms were surveyed by phone to determine the extent of proper PTO shielding. In the same year, on-site audits were performed at 211 randomly selected New York livestock and dairy farms using a four-point scale to assess PTO shielding. Supplemental data were gathered on farm acreage, number of livestock, principal commodity, and operator experience. The phone survey data for livestock and dairy farms were then compared to the on-farm audit data. In the phone survey, 72.5% of farms reported having shields on all implements. The mean percentage of implements reported to be shielded was 90.2%. By on-farm audit, 10% of farms had all implements properly shielded, and the mean percentage of properly shielded implements was 56.7%, with shielding rates differing widely for different classes of implements. No significant predictors of PTO shielding were identified. The phone survey greatly overestimated proper PTO shielding rates when compared with the on-farm audits. These data suggest a lower level of proper shielding among farmers than is mandated by current industry safety standards. The results also identify a principal weakness of phone surveys in accurately assessing the true magnitude of on-farm risk for PTO entanglement.