



Safety Note

UNIVERSITY OF CALIFORNIA
AGRICULTURE AND NATURAL RESOURCES
ENVIRONMENTAL HEALTH AND SAFETY



Safety Note # 11

POWER TAKE-OFF SAFETY



Photograph Courtesy of Pennsylvania State University Managing Agricultural Emergencies

Data from the U.S. Bureau of Labor Statistics indicate approximately 40 annual fatalities occur nationwide from entanglements in farm machinery and equipment. Additionally, about 150 nonfatal farm entanglement injuries result in amputations every year. Other entanglement injuries include severe contusions and cuts, skin burns, dislocations, broken bones, and scalpings. Power take-offs (PTOs) are frequently identified as the causative agent in farm-related entanglements.

PTO Facts

- PTOs rotate at either 540 rpm or 1,000 rpm and at these speeds, revolve much faster than any evasive action that could be taken by an entangled person.
- A PTO shaft rotating at 540 rpm (9 times per second) is capable of snaring loose clothing or shoelaces and wrapping an arm, leg, or foot several times around the shaft in less than one second.
- California regulations (Title 8, Section 3440 c) require all PTO shafts and drivelines to be guarded.

Pre-Use Activities

- Before using, always inspect the PTO shaft, driveline, and universal joint to assure they all are properly guarded and maintained. Spin the driveline guard to assure it is not stuck to the shaft.
- If the PTO shaft, driveline, and universal joint guards fail the pre-use inspection, notify your supervisor and remove the equipment or machinery from service by attaching a red tag that states "DO NOT USE." Complete red tag with appropriate information.

Operating Precautions

- Always tie back or secure hair under a cap before operating farm machinery. Do not wear loose clothing or jewelry.
- Before engaging a PTO, look around to assure the shaft and driveline is clear of people, animals, or obstructions.
- Keep clear of and never step over rotating PTO drivelines.
- Prevent PTO shaft and driveline abuse by avoiding tight turns, gradually engaging power to the shaft, and not over tightening slip clutches on PTO-driven machinery.
- Always take the PTO out of gear and shut off the engine before dismounting a tractor and stopping work for lunch, repairs, equipment adjustments, or at the end of the day.
- Never work on machinery or equipment that has an engine running or is energized in any way.