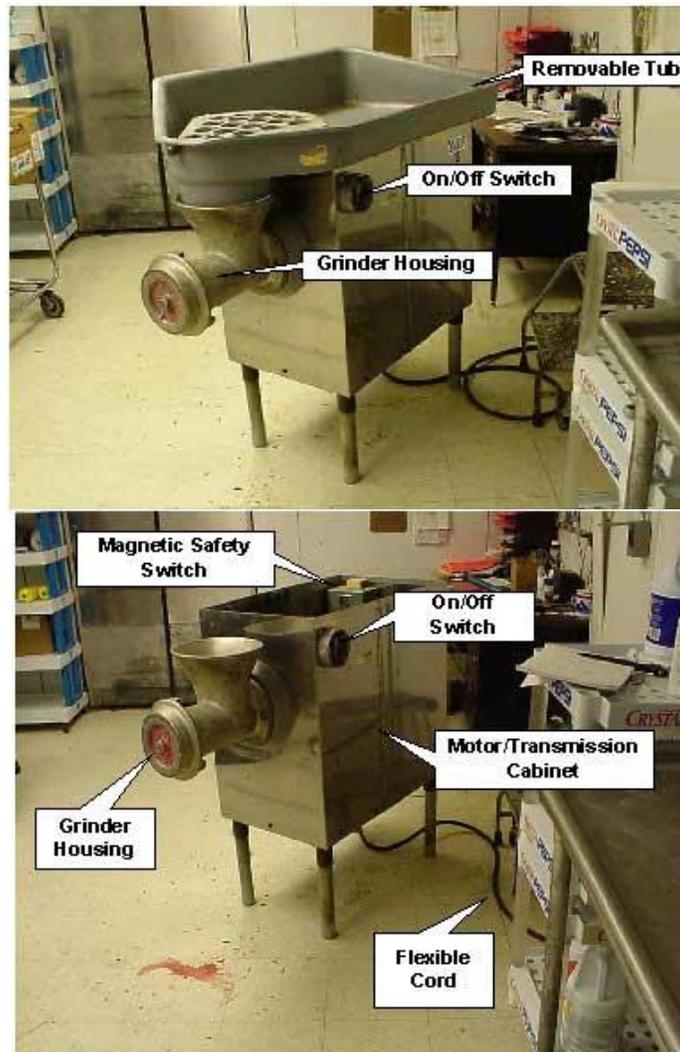




## Case Study #1 – Amputation in Meat Grinder

A 15-year-old part-time worker (the victim) at a retail grocery store suffered amputation of the right arm as a result of being caught by the auger of a meat grinder while he was reassembling it. The victim, working after school, had completed washing and cleaning the disassembled parts of the grinder and was reassembling it without de-energizing and locking out the machine's power supply (See Photos Below). He inserted the auger into the grinder's housing and reached through the feed-throat with his right hand to guide it into engagement. As he did so, he bumped against the unprotected on/off lever switch mounted about waist high on the machine's side. The grinder started and the auger pulled his hand and arm into the housing. He turned the machine off, pulled his arm from the grinder housing and ran toward the front of the store. The store manager applied pressure to his bleeding arm while a coworker called 911. The victim was transported to a local hospital. His right arm had been amputated just below the elbow. A magnetic safety switch mounted on top of the motor starter was designed to prevent operation when the Removable Tub was taken off. The safety switch had not worked for over 16 years and employees were not aware that the safety switch existed. (Source: <http://www.cdc.gov/niosh/face/In-house/full200013.html>)



## Case Study #2 – Fatality by Dough Mixing Machine

A 15-year-old male pizzeria worker was killed when he became entangled in a machine used to mix pizza dough (see photos below). The victim had arrived in the United States from Guatemala one month before the incident and had been working at the family-owned pizza restaurant for two weeks. He was paid to do odd jobs at the restaurant, mostly sweeping and cleaning. On the night of the incident, he was cleaning the pizza dough mixer as the restaurant was closing for the evening. He was working alone in the kitchen as the remaining staff cleaned the adjoining dining room. He apparently lifted the cover of the mixer, uncovering the 32-inch-diameter mixing bowl, and started the machine. As he reached in to the bowl to clean it, he became entangled on a large mixing fork (beater) that rotated inside the mixing bowl. His co-workers heard him scream, but were unable to reach him in time. The mixer cover was equipped with a safety interlock activated by a pin pressed by the hinge of the cover. On this mixer, the weight of the open cover flexed the hinge enough to disengage the interlock, allowing the machine to activate with the cover open. (Source: <http://www.cdc.gov/niosh/face/stateface/nj/01nj118.html>)



## Case Study #3 – Fatality by Baling Machine

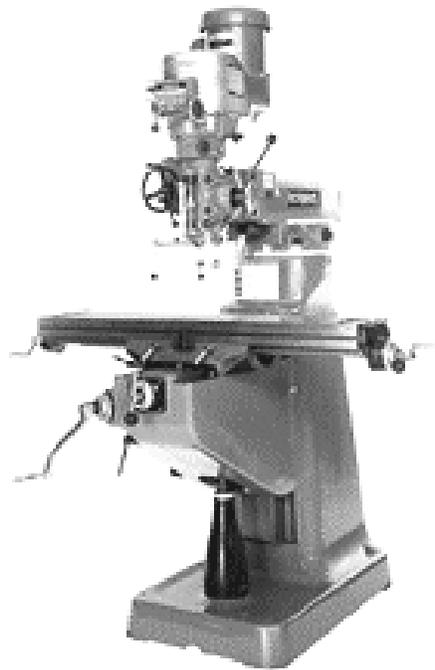
A 16-year-old male produce-market worker (the victim) died from crushing injuries after being caught in the vertical downstroke baling machine that he was operating (see picture below). The victim, working alone in the basement of a small produce market, was crushing cardboard boxes when at some point in the compacting process he was caught by the machine's hydraulic ram. The victim was discovered by an exterminator spraying the basement, who notified the store manager to call police and emergency medical services (EMS).

Subsequent examination by investigators revealed that the safety interlock had been bypassed, allowing the machine to operate with the loading door in the open position. The victim may have reached into the baling chamber during a compression cycle to adjust a tie wire or a liner box and was caught by the ram platen. (Source: <http://www.cdc.gov/niosh/face/In-house/full200019.html>)



## Case Study #4 – Drill Press Fatality

A 57-year-old male supervisor/drill press operator (victim) was fatally injured after his shirtsleeve was caught by the rotating drill bit of the drill press he was operating. The rotating bit tightened the shirt around his neck, strangling him. The victim, working alone, was clamping eight-inch by eight-inch by half-inch thick steel plates to the drill press table while the drill bit was rotating. A co-worker was passing by and noticed the victim caught in the running drill press. The co-worker shut off the drill press as another co-worker arrived to help. Both co-workers were trying to hold up the victim while a third co-worker went to call for emergency assistance. The victim was transported to a hospital in a neighboring state where he was pronounced dead. (Source: <http://www.cdc.gov/niosh/face/stateface/ma/99ma033.html>)



## Case Study #5 – Conveyor Belt Fatality

An 18-year-old male (the victim) died when his right arm became caught in the roller mechanism underneath a conveyor belt. He was pulled into the roller mechanism and suffered compressional asphyxia and blunt force injuries. The employer was a corporation that manufactured hardwood trim, stairways, doors, mantels and moldings. The victim had worked for the employer two months in the cutting room as a chop saw operator. His job was to chop out knots and other imperfections, to cut rough lumber to the desired lengths, and to clean up scrap wood by loading it onto the flat portion of the conveyor, which ran the length of the building.

On the day of the incident, the victim began his 10-hour shift at 4:30 p.m. He had been working approximately seven and a half hours when the incident occurred. His work station was approximately 150 feet away from the portion of the conveyor involved in the incident, but he had left his work station because he was caught up. After 5-10 minutes had elapsed, his supervisor began to look for him.

The supervisor finally located the victim, entangled in the inclined portion of the conveyor belt. The victim's right arm, up to the shoulder, had been pulled into the roller mechanism underneath the belt at a point where the bottom of the roller was almost six feet above the floor (see Figure below). The supervisor, upon seeing the victim, immediately shut off power to the belt at a wall panel four feet beyond where the victim was entangled.

Since there were no eyewitnesses to this incident, it is not certain how the victim became caught. The roller mechanisms were too high to have caught him or his clothing (sleeveless shirt, jeans) as he walked by unless he jumped up or reached up. The victim was not wearing any gloves or other personal protective equipment (PPE). The conveyor belt was in constant operation when the plant was running so workers throughout the plant could place scraps on it at any time. It is possible that the victim might have been climbing up the conveyor belt and may have caught his hand in the roller from above. Coworkers reported having seen the victim riding the raised portion of the belt on previous occasions, and he had received written reprimands for this. It is also possible that he reached up as he was walking under the belt, catching his hand between the rollers. (Source: <http://www.cdc.gov/niosh/face/stateface/ky/98ky044.html>)

