Backup Accidents Happen!

How technology helps waste collection haulers prevent accidents

How do experienced waste collection truck drivers suddenly find themselves involved in a collision or, worse yet, a personal injury backing accident?

Backing accidents happen much more often than waste truck and waste hauling companies realize; although current insurance companies estimate that the average repair cost is approximately $8,000 per incident, there is a darker and often more tragic cost when the object hit by a backing truck is a person. Five hundred people die each year, and an additional 15,000 are injured from backing accidents.

While trucks can be driven forward with relative safety, a whole new set of challenges is presented to the driver when backing up. Here are a few examples of why:

- Mirrors or video cameras can present different depths of perspectives, which can result in unwanted contact even if there is only an inch or two difference in perception.
- Hard to see physical obstructions in the driver's path such as pallets, curbs, metal and wood debris, etc.
- Momentary cab distractions such as radio calls, phones, texting, and audible alarms
- High-activity area such as a school or shopping center requiring an additional level of awareness of the area immediately behind the truck, such as objects moving into the path of the truck
- Distracted pedestrians and children wandering into the path of the moving collection truck
- Sudden movements in front of the truck that momentarily distract the driver
- Obstructions to the driver's view such as bushes, signs, trees, and gates
- Low visibility conditions caused by weather, night, poor lighting, etc.

There is also the complexity of the modern cabs in waste collection fleets nowadays that adds yet another layer of potential distractions that can momentarily divert the driver's attention from the path of a backing truck. The left mirror, right mirror, and video camera above the driver require constant head and eye movement that can add to the crucial reaction time as described in the following details.

Let's create a situation: A backup collision has occurred—how far will your truck continue before stopping? Accidents can and will happen to the most experienced drivers. Something unforeseen occurs such as an object suddenly appearing in the path of the truck: brakes must be applied hard and fast. There are a few factors that determine the distance traveled before the truck comes to a full stop. The stopping distance of a truck depends on all of these determinants: perception time, reaction time, and event distance.

Perception Time

This is the time it takes for a driver to see or hear a hazard condition and to recognize that immediate action is required. In the best of conditions, with a hazard developing in front of the driver, it can take from 1/2 to 3/4 of a second to make the conscious decision to apply the brakes. If the driver is rotating his gaze between mirrors and a video camera as an object presents itself immediately in the path of the unobserved corner of the truck, the most experienced driver could take one to two full seconds to recognize the hazard and then make the decision to respond.

Reaction Time

Once a decision to react has been made, the reaction time is the time it takes the driver to remove his foot from the accelerator and to fully apply the brakes. The estimated time this action takes is 1/2 to 1 second.

Event Distance

Based on perception time and reaction time, this is the distance the truck will travel before stopping. Any object suddenly presenting itself within this distance will be struck. This distance is directly proportionate to the backup speed of the truck.

We have gone over the various scenarios on how backing accidents can and will happen . . . but these can be prevented. How, you ask?

Prevent Backing Accidents: Automatic Backup Braking Technology That Prevents Accidents

We now have technology that both detects objects in the path of a backing truck and reacts instantly by automatically applying the brakes. This technology combines object detection and applies the brakes automatically, thus reducing event distance from a number of feet to just fractions of an inch.

The detection can be infrared (IR), microwave, or ultrasonic, but it is important that detectors are designed and configured for the following characteristics:

1. The system is automatically activated only when the truck is in reverse.
2. Focused Coverage Area: It is important to limit the coverage to an area directly in the path of the truck. For a waste collection truck, that would be approximately a width of 12 inches or less, and a minimum of 60 inches behind the truck without actually contacting the ground. This is critical because excessive false alarms will annoy the driver and create unnecessary delays in a simple backup procedure.
3. There should be an override or temporary defeat control when the driver acknowledges the object behind setting off the sensors during the backup maneuver (for example, a dock or refuse container)
4. Any override or defeat setting must be reset back to normal operation as soon as the backup procedure is finished. Typically, an automatic backup braking system will reset as soon as the reverse gear is not engaged.
5. Never install any switch that can turn the automatic braking system completely OFF. The automatic braking will become a reliable tool to the driver and the unknown absence of this feature could have severe consequences. MSW

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