

## Creating a Safer Waste Truck Environment

John I. Rich

As the drumbeats of regulation become louder due to federal agency post-accident investigations, studies clearly show **THE SAFETY ADVANTAGES OF USING VIDEO-EVENT RECORDING FOR ACCIDENT ANALYSIS AND DRIVER BEHAVIOR.**

**USING THE MOST RECENT DATA AVAILABLE FROM** the Bureau of Labor Statistics (BLS), when adjusted for the differential in both the estimated numbers of people employed and vehicles, a waste collector is eight times more likely to lose his or her life in a transportation-related incident on the job than a police officer driving a cruiser. The BLS statistics also show that solid waste collection is the fourth most hazardous occupation in the U.S., and more than 10 times the average rate for all occupations in the country.

Of course, waste hauling poses a threat to the safety of others and their property. Negotiating narrow alleyways through neighborhoods in a vehicle that can weigh as much as five elephants, will, understandably, cause significant damage to another vehicle and injury to its passengers—not to mention what it could do to an unprotected bicyclist or pedestrian. As Don Quixote's sidekick, Sancho Panza, said in the Broadway musical *Man of La Mancha*, "Whether the stone hits the pitcher or the pitcher hits the stone, it's bad for the pitcher."

One insurance underwriter who has specialized in analyzing the loss data for the waste industry for more than 20 years maintains that for every 10 waste vehicles in a fleet there will be two accidents annually, and one of every nine collisions will involve bodily injury to the other party. And, with the tremendous size difference between vehicles and the number of plaintiffs' attorneys using the Internet to actively solicit injured parties specifically from waste vehicle accidents, the needle on the assumption meter will point squarely at the waste truck operator.

Here are a few statistics worth noting: As reported by the Web site [TruckInfo.net](http://TruckInfo.net), more than 75 percent of truck driving accidents in which waste vehicles are involved are due to the driver of the passenger vehicle. However, in instances when the truck driver was at fault, the National Transportation Safety Board (NTSB) reported that 80 percent of all large truck crashes and 65 percent of near-crashes were the result of the truck driver's inattention or distraction. So, although it appears that the likelihood is low that the driver of the trash truck might have been at fault, in the cases when he was at fault, the chances are high that the driver was involved in a distractive activity.

It can be challenging to prove that your driver was not at fault, and difficult to improve driver behaviors. But there are technologies available that can address

and, in some cases, solve these problems. Following is a summary of each of them, along with their respective advantages and limitations.

### Event Data Recorders

Event data recorders (EDRs) are common devices that have been in use on trucks and automobiles since the early 1990s. They collect and store such meaningful data as wheel speed at the last stop, engine behavior, accelerator governor, cruise-control use, engine-use history and fault codes, all of which can be useful in crash analysis. But, because they are manufactured by several companies worldwide, the information they collect is inconsistent.

In 2010, NTSB issued a recommendation to the Federal Motor Carrier Safety Administration (FMCSA) that all trucks over 10,000 Gross Vehicle Weight be equipped with EDRs, and be governed by a uniform set of performance standards.

Suggested standardization and inclusion of EDRs on all heavy trucks notwithstanding, the retrievable information recorded provides no video evidence. Nor do they offer driver-centric information that could be useful in modifying poor or risky driver behavior. Moreover, the reliability of the data has been called into question. Therefore, while providing some useful data, the efficacy of EDRs in post-accident analysis and driver-behavior modification is limited.

### Global Positioning Systems

Global positioning systems (GPS) have been in use since the early 1970s. Information is sent from a transmitter in the cab, through a series of satellites, to a receiver where data such as a truck's fuel usage, historical speed data, hours of service, hard-braking incidents, maintenance records, and safety compliance can be recorded and transferred to the GPS tracking server. There, it is available for review via a Web site, an advantage over EDRs. Fleet activity can be viewed instantaneously or historically, and the stored data used for record-keeping, analysis and training.

GPS, while offering information that addresses a broader scope of risk-management needs than an EDR, offers no video evidence to graphically show driver behavior or the activity outside of the waste truck.

## Accident Event Recorders

One of the most effective means of positively modifying driver behavior, a crucial safety component and one which neither the EDR or GPS can capture, is the video recording provided by an accident event recorder (AER). Most of the available setups have an inward-facing camera that records driver behavior immediately preceding and following an event triggered by sudden erratic vehicle movement, including a crash, as well as an outward-facing camera that memorializes what happened in the driver's field of vision.

AER technology continues to evolve with additional features either currently available or on the horizon including a larger-capacity storage card that is capable of recording up to three days of activity, geo-fencing, which sets up a virtual safety perimeter around the vehicle and ensures that the driver is adhering to pre-determined route parameters, live tracking, and capturing data from events other than sudden changes in the speed or truck direction. For instance, events will be triggered by exceeding the posted speed limit or running a red light or stop sign using sign or traffic light recognition technology. Other advantages that address the unique exposures of a waste hauler are the ability to add up to six rear and side vision cameras in addition to the two traditionally mounted in the cab, providing eight recorded views and the ability to access the information remotely through the Internet.

In 2010, the NTSB investigated a multi-vehicle crash that involved a pickup truck, a bobtail tractor and two school buses in which two people were killed and 38 injured. The NTSB determined that the truck driver responsible for causing the string of collisions had sent and received a combination of 11 text messages immediately prior the accident. The resulting NTSB investigation led to their release of a strong recommendation to the FMCSA in December of 2011 that would, in the words of the NTSB:

- "Require all heavy commercial vehicles to be equipped with video-event recorders ...", and
- "Require motor carriers to review and use video-event recorder information..."

In an FMCSA report that summarized the top 10 factors for which drivers of large trucks (over 10,000 pounds) were coded in a fatal crash, speeding was the most commonly coded factor. This would have been captured on an EDR, GPS or AER. But the remaining nine factors, including the second most-cited code—driver inattention from eating, texting or cell phone use—would have required video evidence not available on either an EDR or GPS for use in post-crash visual review and analysis. So how important is remaining attentive behind the wheel? A research project conducted by The Virginia Tech Transportation Institute found that a safety-critical event is 163-times more likely to occur if a driver is distracted.

To show the effectiveness of video event recorders that capture video evidence, the FMCSA conducted a hands-on study with the cooperation of two large commercial trucking carriers. Of the two carriers involved in this study, one experienced a 38 percent reduction in the mean rate of recorded safety-related events per 10,000 vehicle miles traveled, while the other experienced a 52 percent reduction in recorded safety-related events.

AERs are offered on a self-administered program in which the hauler's risk manager reviews the footage. In this arrangement, the cost to the transporter is that of purchasing the cameras, which range from \$500 to more than \$1,500 per truck, and the time of the risk management person charged with reviewing the recordings, identifying risky behavior, creating reports and designing appropriate training sessions. Also available is an option in which the recordings are reviewed for a fee by trained professionals, employed by the camera provider, who provide to the hauler reports and coaching recommendations based on their findings. The loss-control divisions of a select

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few insurance companies that specialize in insuring heavy vehicles offer ways to help mitigate the cost of these systems. Waste haulers can contact their insurance company, broker or agent to investigate this option.

With the hard data supporting the effectiveness of AERs in positively changing driver behavior and reducing accident frequency, waste haulers are making this technology the centerpiece of their risk management programs. According to data by a leading provider of AERs, the growth of camera use and related third-party analysis services has grown by more than 98 percent in the last three years alone and is expected to nearly quadruple each year from 2012 to 2015, and see exponential increases for at least the next 10 years beyond that.

AER technology offers critical video evidence not available from either an EDR or GPS, making it a much more effective tool in the event of a claim and in positively modifying driver behavior. While continuous recording technology is available from some vendors, many AERs only capture the very moments before and after a sudden, erratic change in direction or braking—as in an accident—leaving only a short video record of driver behavior. Almost all installations include one camera with its outside range limited to a forward-facing field of vision with its predictable blind spots. Other activity surrounding the vehicle is not recorded.

### Radar-Enhanced Technology

Radar-enhanced technology, including active doppler technology, offers a collision warning system equipped with sensors that can be installed in the front, rear, side or any blind spots, and are designed to detect the presence and movement of objects, including people, animals or other vehicles around the

truck. Since a vehicle speed of only 5mph equates to a 7.3 FPS (feet per second), vehicle movement active sensing in addition to visual confirmation is highly recommended. As the device detects that it is closing in on an object, it emits both an audible warning as well as a series of lights that visually warn the driver of impending danger. The latest models are even capable of detecting hazards that are approaching from around a corner and can maintain a pre-set distance between the truck and a vehicle ahead of it. Operators may elect to integrate radar-enhanced systems with AER technology to provide the most comprehensive safety solution.

Similar to the other devices, radar-enhanced technology captures the truck's average and maximum speeds, turn rate and significant braking events, as well as the status of the truck's controls and working systems. Unlike the EDR, the radar computer technology allows it to gather, monitor and transmit the data directly to an analyst or risk manager. Downloading the information wirelessly reduces the chance that data will be lost, as has been the case in at least one major NTSB study of EDRs.

Another advantage of radar technology is its ability to be unaffected by environmental conditions that other sensor technologies are susceptible to, such as snow, ice, rain, fog, barometric pressure and sunlight. This allows radar to provide the rates of speed and direction of other vehicles involved in an accident and the location of nearby objects without the possibility of interrupted performance—all critically important in accident reconstruction. Like the AER and GPS, the radar system can either be installed as a part of the truck assembly or retrofitted on an existing truck.

### “But, it wasn't my fault!”

Accidents often cause finger-pointing situations. For example, the driver of a passenger car may allege that the garbage truck ran a stop sign or a red light, while the waste truck operator might tell the boss that the other driver was in the wrong. Simply playing back a video recording of the incident will graphically depict what actually happened and the discussion, as well as the resulting insurance claim, will end pretty quickly. If a claim settles quickly, costs are reduced, which in turn improves a company's loss experience. The better the experience, the better chance a hauler has of paying less for insurance.

### Results Pay

Every waste hauler will evaluate whether upgrading to some form of accident event recorder makes sense for their company. Regardless, it cannot be disputed that waste vehicles will be involved in accidents, employees will get injured or worse and damage will be caused to the vehicles of others as well as their occupants. It is also true that there continue to be advances in technology leading to equipment that can provide more and more valuable information for use in accident causation analysis, positive driver behavior modification and compliance gathering data. There has been tremendous actual and projected growth of accident event recording devices in waste vehicles, especially by larger haulers whose cost-benefit analysis has fueled this growth.

The drumbeats of regulation are becoming louder because federal agency post-accident investigations and results of university studies clearly show the safety advantages of using video-event recording for accident analysis and, as previously mentioned, changing driver behavior. AERs work and more waste haulers are coming to the conclusion that the time is now to install them. **WA**

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