DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service

Centers for Disease Control
and Prevention
National Institute for Occupational
Safety and Health
1090 Tusculum Avenue
Cincinnati OH 45226-1998

August 18, 2026
HHE 2025-0144

Ms. Kari Wilson
Feeder Supervisor
United Parcel Service
1830 Lampman Drive
Billings, Montana 59102

Dear Ms. Wilson:

In September 2025, the National Institute for Occupational Safety and Health (NIOSH) received a Health Hazard Evaluation (HHE) request from a representative of Teamsters Union Local 190 to evaluate United Parcel Service (UPS) employees' exposures to infrared radiation-A (IR-A) generated by infrared light-emitting diodes (IREDs) in the driver-facing infrared camera driver monitoring systems installed in company vehicles. Employees were concerned about headaches, eye irritation, and related health effects they attributed to these cameras.

What We Did

We initially spoke with the requestors in September 2025 to get more information about the request, employee symptoms, and to provide information about the HHE process. During these calls, employees noted that they had not been informed about or provided any training for these driver-facing infrared cameras. They also mentioned that employees of other long haul trucking companies that utilize comparable infrared camera driver monitoring systems had shared reports of similar symptoms.

We reached out to UPS management in Billings, MT and Cincinnati, OH about the possibility of a site visit to collect infrared light measurements on the driver-facing camera systems. However, management later informed us that we would not be able to make a site visit to collect measurements on the camera systems.

We reviewed the results of an informal symptom survey conducted by the union via a computer-based form and completed by more than 250 union members. We also reviewed the results of informal lab testing (provided to us by the requestors) conducted by International Light Technologies (Peabody, MA) on IR-A emissions from driver-facing infrared camera models used in UPS vehicles. Lastly, we reviewed correspondence between the Occupational Safety and Health Administration (OSHA) and UPS regarding employee concerns about infrared light exposures.

What We Found

At the time of the request, employees reported driving UPS trucks for 8–10 hour shifts. Truck cabins were fitted with Lytx® dash camera models ER-SF-300 or ER-SF-400, which use 4 IREDs to provide clear video recording of the driver's face and in-cabin surroundings. The cameras are motion-activated and operate nearly continuously while the vehicle is in use.

Over 250 employees responded to the informal symptom survey. The survey asked open-ended questions about symptoms affecting the eyes and skin, visual distractions caused by the camera system, and whether any medical treatment was administered as a result. Employees could provide further details or explanation for their responses in a designated comments section of the symptom survey form. Many employees mentioned irritation of the eyes and skin around the eyes. In addition, eye fatigue, dry eyes, and watery eyes were also frequently mentioned. Audible and visual alerts from the camera system were frequently cited as being a distraction that "pulls attention away from the road." We were not provided the details of the survey design such as method of recruitment or dissemination, or the population of employees that were offered the survey, so were not able to conduct full analysis of the results. Nevertheless, the survey results provided context about the nature of employee concerns and symptoms attributed to infrared camera exposures.

We reviewed results of laboratory testing of infrared camera light emissions conducted by International Light Technologies, a third-party laboratory specializing in light measurement instruments. Infrared light measurements were taken for several hours at different configurations and distances. According to the results shared with us by the requestors, the camera operated in the standard infrared camera wavelength of 850 nanometers (nm). The broadband irradiance (radiant energy on a surface per unit area) measurements ranged from 0.44 to 1.25 microwatts per centimeter squared ($\mu W/cm^2$). The spectral irradiance (radiant energy on a surface per unit area per unit wavelength) ranged from 1.8 to 9.5 microwatts per centimeter squared per nanometer ($\mu W/cm^2/nm$). We were unable to obtain precise details of the testing methods and instruments used during this sampling, so we were unable to fully analyze or draw actionable conclusions from this data.

We reviewed correspondence between UPS and OSHA regarding employee concerns about infrared light exposures. At the conclusion of this correspondence, dated September 2025, OSHA determined that the "hazards reported" had been "investigated and corrected" by UPS and that the matter was considered closed by OSHA.

Discussion

Visible light is a type of electromagnetic radiation. While there are no distinct borders for where visible light begins and ends on the spectrum, the wavelengths between 380 nm and 780 nm can

be used according to the International Commission on Non-Ionizing Radiation Protection (ICNIRP) [ICNIRP 2026]. IR-A encompasses wavelengths above the visible spectrum and extends to 1400 nm wavelengths [ICNIRP 2026].

Cameras equipped with IREDs (typically using 850 or 940 nm wavelengths) can capture images or video recordings even in near-complete darkness by illuminating the surroundings with near-IR light and detecting the reflected light. The cameras typically use infrared-sensitive sensors and may include infrared-cut filters which block infrared light during daytime use, while specialized applications may use infrared-pass filters. This makes IREDs useful for applications such as night vision security cameras, facial recognition systems, and automotive driver and occupant monitoring.

The eyes and skin primarily absorb infrared radiation as heat. The eyes are more vulnerable to infrared light exposures because they are especially sensitive to thermal damage [ICNIRP 2026]. Excessive exposures to infrared light are often reported as the sensations of heat or pain in the affected area [OSHA 2026]. Exposures to high-intensity industrial sources of infrared light, such as those experienced by iron, steel, or glassworkers, can lead to lens opacities or cataracts [ICNIRP 2026].

ICNIRP [2020] states that based on current exposure limits, most visible light-emitting diodes (LEDs) and IREDs pose no acute hazard to the eye. Many IREDs are barely visible in the dark to most individuals [ICNIRP 2020]. There is a notable gap in knowledge about the effects of chronic exposures or longer periods of exposure to invisible and barely visible infrared light sources. Further research into the potential effects of these exposures is needed.

Light intensity can be measured in $\mu W/cm^2$, which is the total amount of broadband energy received on a surface per unit area, or in $\mu W/cm^2/nm$ which is the amount of spectral energy received by a surface per unit area for a selected wavelength. These intensity measurements are often described as irradiance. Neither OSHA nor NIOSH currently have any established occupational exposure limits for infrared radiation exposures. ICNIRP is an entity that publishes recommended exposure limits for infrared and other types of non-ionizing radiation. ICNIRP's website (https://www.icnirp.org/) has more information on this topic. However, accurate measurements of infrared light levels from the cameras' IREDs are needed to calculate and better understand potential worker exposures.

While low-intensity infrared exposures to the eyes can generally be considered safe, there are instances where even low-level exposures can be detrimental to employees. Some individuals can be at risk from exposure levels that are generally considered harmless [ICNIRP 2013]. This can include those with photosensitive medical conditions or those taking photosensitizing agents.

Recommendations

1. Evaluate employee exposures to infrared light while operating company vehicles equipped with driver-facing camaras.

2. Consider reducing the amount of time the infrared cameras are on during the work shift. Reducing the amount of time IREDs are in use can substantially reduce employees' exposures.

3. Provide training to employees regarding the use of infrared cameras, potential risks of infrared light exposures, and the levels of exposure expected during their work.

4. Some employees may be photosensitive due to known or underlying medical conditions. Consider reassigning sensitive employees to areas where infrared light is not used.

5. If not already in place, begin using a system to formally track employee health concerns. Allow employees to report concerns and symptoms anonymously to encourage participation. This will help identify trends in complaints, symptoms, injuries, and illnesses, if any.

6. Establish a regular schedule to review employee concerns, injuries and illness trends with the goal of identifying hazards that need to be evaluated further. Ensure that the review protocols maintain privacy and confidentiality of employees.

7. Employees who experience adverse health effects, or that have health concerns, should be referred to their physician or an occupational medicine practitioner for further evaluation to determine appropriate care. If an employee is determined by their healthcare provider to have an illness related to an occupational exposure, management personnel should work to eliminate or reduce that exposure and assess the need for environmental evaluation.

8. Enable good communication between managers and employees, especially regarding responses to employee health and safety concerns. One way to accomplish this is by providing employees with an anonymous system to report workplace health and safety concerns as recommended above. Another way to enable good communication between managers and employees is to establish a joint management and employee health and safety team with regular meetings. Those involved in the work can best assist in setting priorities and assess the feasibility of our recommendations for the specific situation.

This letter serves as a final report and concludes this health hazard evaluation. NIOSH recommends that employers post a copy of this letter for 30 days at or near work areas of

affected employees. We are sending a copy of this letter to the Occupational Safety and Health Administration Denver Regional Office and the Montana Department of Health & Human Services.

Thank you for your cooperation with this evaluation. If you have questions, please call me at 513-458-7122.

Sincerely yours,

Melissa G. Charles -S
Digitally signed by Melissa G. Charles -S
Date: 2026.08.25 14:56:08 -04'00'

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Hazard Evaluations and Technical Assistance Branch
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cc: Teamsters Union Local 190
Occupational Safety and Health Administration Denver Regional Office
Montana Department of Health and Human Services

References

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