

For Release: Feb. 5, 2002

NewsRelease



National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

Keith Henry
Langley Research Center, Hampton, VA

Janette E. Fennell
Kids And Cars, Kansas City, KS
913.327.0013 or www.kidsandcars.org

NASA develops child car-seat safety device

Every year infants and small children die needlessly because they have been left in vehicles, according to KIDS 'N CARS, a national nonprofit safety organization. As a result, NASA has developed a safety device that would alert parents who inadvertently leave their infants and small children strapped in car seats.

The NASA device, inspired by aircraft flight test technology, uses precision materials and electronics to sense when a child is seated in a car infant or booster seat after the driver has left the vehicle.

Called a Child Presence Sensor, the device was developed at NASA's Langley Research Center, Hampton, Va. The research center is looking for a commercial partner to further develop and market a product based on the technology.

"I wanted something that would serve as a second set of eyes and ears, something that could easily and inexpensively be retrofitted to existing child car seats," said principle inventor, William "Chris" Edwards of NASA Langley's Laser Systems Branch. Edwards has small children of his own and had read about cases around the country where well-meaning parents had inadvertently left a small child in a vehicle with disastrous results.

Overloaded, exhausted, distracted or confused by a change in routine, working parents can completely forget that they've left their children unattended. Others may leave sleeping children in car seats while they exit their vehicles for what they believe will be a quick errand. Yet, left alone for only a few minutes, a small child can be abducted, set the vehicle in motion, or -- even on a seemingly mild day -- suffer a deadly heatstroke.

"These tragic deaths are entirely preventable," said Janette E. Fennell, co-founder and executive director of KIDS 'N CARS. "Parents should never, never leave children alone in a parked vehicle.

"Cars are inappropriate places for children to be left without adult supervision. There are systems already installed in our vehicles to warn us that we have left our headlights on or our keys in the ignition. Our precious children deserve at least that same protection."

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The Child Presence Sensor driver alarm, designed to hang on the driver's key ring, sounds ten warning beeps if the driver moves too far away from the vehicle. If the driver doesn't return within one minute, the alarm will beep continuously and cannot be turned off until it is reset by returning to the child safety seat.

The sensor switch triggers immediately when a child is placed in the seat and deactivates when the child is removed. The switch has a large activation area with a sensitivity of about eight ounces. The sensor detects weight once the child is placed in the seat, transmitting a unique code to the driver-alarm module via a radio-frequency link. The system incorporates a long-life battery for reliability. If the battery is low, the system alerts the driver with an audible alarm.

Edwards was aware of a simple, yet precise, sensor technology developed for the NASA Langley 757 research aircraft. The aircraft is a highly-modified flying research lab for experiments ranging from aviation safety to increasing capacity at major airports. The aircraft sensor is mounted in the main landing gear area to sense environmental effects acting on the aircraft. That data is then beamed to the cockpit by way of a radio frequency transmitter and receiver system.

Edwards and NASA Langley co-inventors Terry Mack and Edward Modlin adapted the self-contained radio frequency technology from the 757 aircraft project and combined it with Modlin's highly-sensitive switch technology to create an inexpensive prototype device.

"We estimate that a commercial partner, to whom we would license the technology, could further develop and market this device to the public for roughly \$20 to \$30, depending upon number of units manufactured. One unit would consist of one transmitter and one receiver. The cost to add a second child seat to the same system would be about half that again," said Brian Beaton, NASA Langley's technology commercialization program manager for the Child Presence Sensor technology.

U.S. companies may inquire about licensing the Child Presence Sensor technology by contacting Beaton at 757-864-7210 or b.f.beaton@larc.nasa.gov.

NASA is timing its announcement to coincide with National Child Passenger Safety Week, Feb. 10-16, sponsored by the National Highway Traffic Safety Administration (NHTSA). KIDS 'N CARS is having a benefit screening of *the Keyman* movie, on Feb. 10 at the Palace of Fine Arts Theatre in San Francisco. This full-length feature film (PG13) tells the story of a man searching for redemption after he unknowingly left his child in the backseat of his vehicle.

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NOTE: A video and electronic still image are available to news media upon request by contacting Keith Henry at h.k.henry@larc.nasa.gov.