

INJURY UPDATE

*A Report to Oklahoma Injury Surveillance Participants**

February 14, 2005

Burn Injuries Resulting from Working on a Motorized Vehicle, Oklahoma, 1988-2002

In the United States, more than one million burn injuries are reported each year. Approximately 50,000 persons are hospitalized, and 20,000 persons present with burns involving at least 25% of their total body surface. Almost 4,000 persons die from burn-related injuries each year.

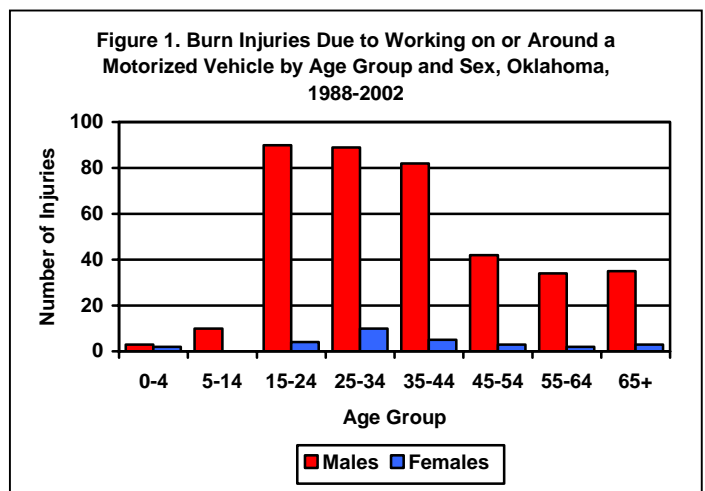
Between 1988 and 2002, 7,234 Oklahomans were hospitalized in a burn center or died as a result of an unintentional burn or smoke inhalation injury. Of these, 414 occurred while the injured person was working on a motorized vehicle or while standing near someone who was working on a motorized vehicle, including any attempt to repair part of a motorized vehicle. In this *Update*, these injuries will be referred to as injuries from working on or around a motorized vehicle. Motorized vehicles include cars, trucks, vans, motorcycles, boats, tractors, aircraft, etc.

The majority of burns sustained from working on or around a motorized vehicle occurred among persons between the ages of 15 to 44 (68%) with an average age of 37 years (Figure 1). Ninety-three percent of injuries occurred among males with a male to female ratio of almost 14:1. The incidence rate per 100,000 population was highest for African Americans (1.5), followed by whites (0.8) and Native Americans (0.5).

Ninety-eight percent of persons (406/414) survived their injuries while 2% (8/414) were fatal. Fifteen percent of persons (62/414) were injured at their work site, and 53% of these were mechanics (33/62).

The most common source of burns while working on or around a motorized vehicle was flame/fire burns, which occurred in 67% of all cases, followed by scalds (31%), contact burns (1%) and chemical burns (1%). Pouring gasoline into a carburetor to prime an engine was the leading cause of flame/fire injuries (61%). Burns from radiator fluid or steam accounted for 95% of all scald burns. The most extensive injuries, burns to over 20% of the total body surface area, were caused by flame/fire (90%). Priming the carburetor accounted for 47% of all the burns covering 10% to 19% of the body surface (Table 1).

At the time of injury, the majority of persons (51%) were working on a car; 14% were working on a truck or van, 3% on an aircraft, recreational vehicle or motorcycle, 11% on other types of motorized vehicles, and 21% were unknown.



*The INJURY UPDATE is a report produced by the Injury Prevention Service, Oklahoma State Department of Health. Other issues of the INJURY UPDATE may be obtained from the Injury Prevention Service, Oklahoma State Department of Health, 1000 N.E. 10th Street, Oklahoma City, Oklahoma 73117-1299, 405/271-3430 or 1-800-522-0204 (in Oklahoma). INJURY UPDATES and other IPS information are also available at www.health.state.ok.us/program/injury.

Table 1. Percentage of Body Burned and Cause of Injury for Burn Injuries Due to Working on or Around a Motorized Vehicle, Oklahoma, 1988-2002

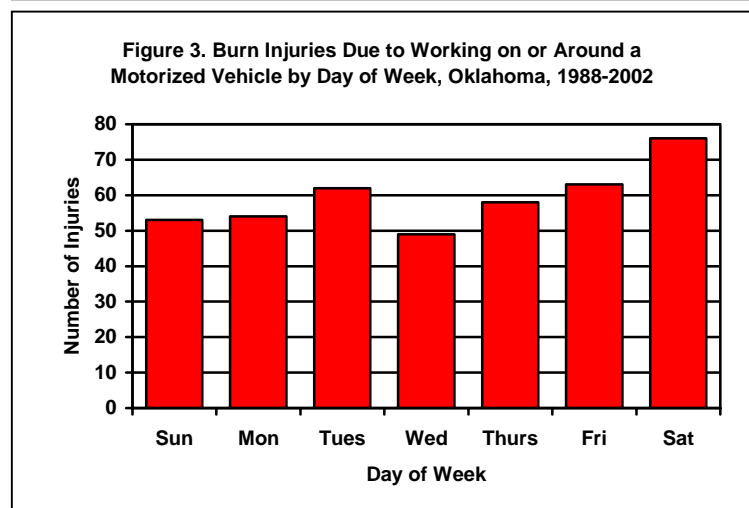
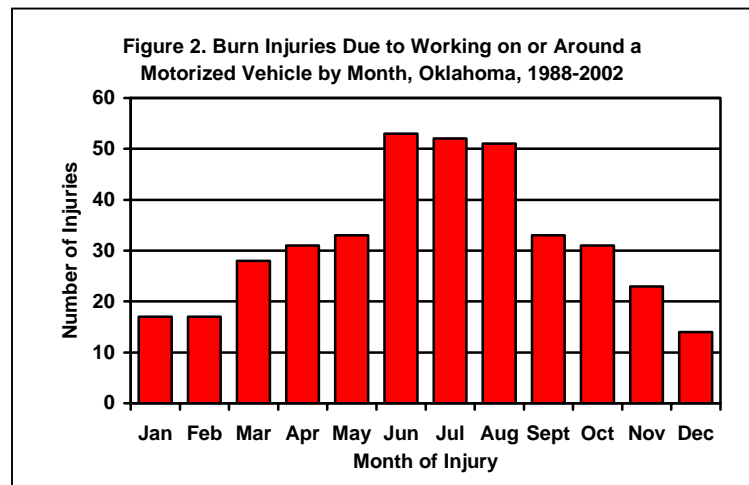
Cause of Injury *	Total Body Surface Area Burned								Total	
	0%-9%		10%-19%		20%-34%		35% +			
	#	%	#	%	#	%	#	%	#	%
Priming Carburetor	75	40%	67	47%	25	43%	3	18%	170	42%
Radiator	66	35%	46	32%	6	10%	3	18%	121	30%
Other Flame/Fire	35	19%	30	21%	27	47%	11	65%	103	25%
Chemical	2	1%	0	0%	0	0%	0	0%	2	<1%
Other Hot Liquid	5	3%	0	0%	0	0%	0	0%	5	1%
Hot Solid/Contact	3	2%	0	0%	0	0%	0	0%	3	1%
Other	1	1%	0	0%	0	0%	0	0%	1	<1%
Total	187	100%	143	100%	58	100%	17	100%	405	100%

*Cause of injury or total body surface area burned was missing for 9 cases.

Among survivors, the average total number of days of hospitalization was 11 days. Data collection for type of insurance started in 1995. Since then, 45% had private insurance, 22% had Medicare or Medicaid, 6% had workers' compensation, 18% had no insurance, 4% had another type of insurance and the type of insurance was unknown or unspecified for 5%.

Among persons over the age of 14, alcohol use was reported in 5% of the injuries and drug use in 3%. None of the eight fatal cases reported positive alcohol or drug use. Twenty-five injured persons were burned unintentionally by someone else; over one-third of those were children (9/25, 36%) standing by a parent who was working on a motorized vehicle.

There was a seasonal variation in the incidence of injuries. Forty percent of all injuries occurred during the summer months, June to August (Figure 2) and almost one-third (31%) of injuries occurred on the weekend (Figure 3).



Cases Briefs

- A 35-year old man was on the highway when his car overheated. He stopped, loosened the radiator cap, and the hot liquid spewed onto him. Because he was paraplegic and in a wheel chair, he couldn't get out of the way and was burned on 10% of his body. He was admitted to a burn center for seven days.
- An 18-year old man spent three days at a burn center after checking his carburetor on the highway while smoking. Gasoline fumes were ignited by the cigarette and caught his left arm on fire.
- A 55-year old man was at a boat dock trying to repair a jet ski when a gasoline explosion occurred; he jumped into the lake to extinguish himself. He was airlifted to a burn center with burns on 12% of his body.
- A 70-year old man with peripheral neuropathy died after using a cutting torch to cut metal on his truck. The grass under the truck caught fire and ignited his clothing. He was unable to feel that his clothing was on fire.
- A 5-year old boy was transferred to a burn center with burns to 30-35% of his body after he was standing near his father's car when the father opened the radiator cap and hot liquid and steam sprayed onto the boy.

Prevention

Burn injuries are preventable. Teaching the hazards of "carburetor priming" and other potential areas of injury during driver's education and automotive repair classes has been proposed as well as including a question on new drivers' license tests.

The following precautions can also help prevent burn injuries while working on or around a motorized vehicle:

- Never open a hot radiator cap; allow the radiator to cool before opening the cap.
- Do not lean over the radiator opening.
- Do not attempt to prime the carburetor when you run out of gas.
- Do not smoke or use an open flame when working on a vehicle engine.
- Do not work on a motorized vehicle while under the influence of drugs or alcohol.
- Keep children and other non-essential persons away from the area when working on a motor vehicle.
- Carry a first aid kit and a fire extinguisher in your vehicle.
- Have your vehicle serviced regularly and especially before any long trip.

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