

Tire Explosions

There have been instances of brand new truck and tractor tires spontaneously, and violently, exploding with no apparent cause while still mounted on the vehicle. The forces involved in this type of explosion are very powerful and capable of causing serious injury to anyone in the immediate vicinity, or a collision if this occurs while the vehicle is being driven.

Although the causes of tire explosion are often difficult to determine, some of these explosions are believed to be caused by flammable vapors that somehow enter the tire. When the vehicle is being operated, the temperature of the air and vapor mixture inside the tire increases due to friction, the outside air temperature, and the effect of sunlight shining on black rubber absorbing heat.

If the vapor and air mixture inside the tire are within the flammable limits that will support combustion, and any or all of the above heat producing factors are present, the temperature inside of the tire can reach the combustion point of the air mixture, and an explosion will occur.

It is believed that the source of this problem is the introduction of flammable gasses and vapors through the compressed air system. The following are some precautions that will help prevent flammable vapors from entering the compressor and subsequently becoming trapped in your tires.

Action Item:

- Do not locate the compressor in a utility room that is also used for storing flammable solvents, paints, thinners, etc. The flammable vapors will be sucked into the compressor intake, and pumped into your tires.
- Do not clean the compressor air intake filter with a flammable solvent. Use a non-flammable solvent or degreaser designed for this purpose that is recommended by the filter manufacturer.
- Do not add alcohol, methanol, or other flammable solvents to the compressor tank to prevent freezing of the condensation inside of the air tank. A better solution is to drain the tank frequently, or relocate the compressor inside of the building to eliminate the freezing problem.

(continued on the next page)

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- Do not locate the compressor near your battery charging area. When batteries are being charged, they emit hydrogen gas during the process that is highly flammable and can be sucked into the compressor intake.

Resources and References:

NDLTAP 2015 You Show Us Award – Service Truck Tire Carrier – Dickey County

<https://www.ndltap.org/events/showus/downloads/2015-service-truck-tire.pdf>

Tire Safety Video – Branick Industries (4:25 min.)

<https://youtu.be/dKIJJqHFfoQ>

OSHA News Brief on a Tire Explosion Injury

<https://www.osha.gov/news/newsreleases/region1/09292016>

Laborer Killed While Inflating a Tire Mounted on a Multi-piece Rim Wheel

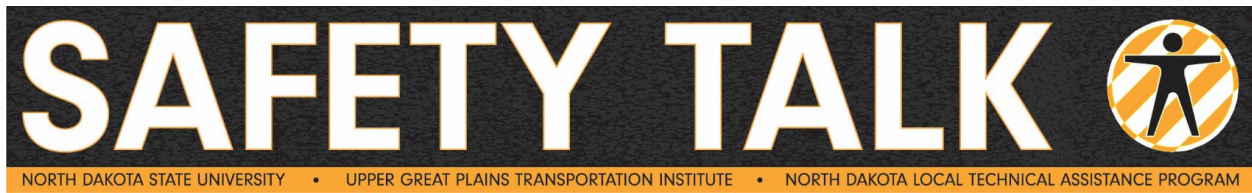
<https://www.cdc.gov/niosh/face/stateface/ma/03ma057.html>

An Apprentice Mechanic Died When the Truck Tire He Was Standing Over Exploded

<https://www.cdc.gov/niosh/face/stateface/ca/05ca007.html>

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Safety Talk Sign-in Sheet Topic: Tire Explosions

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