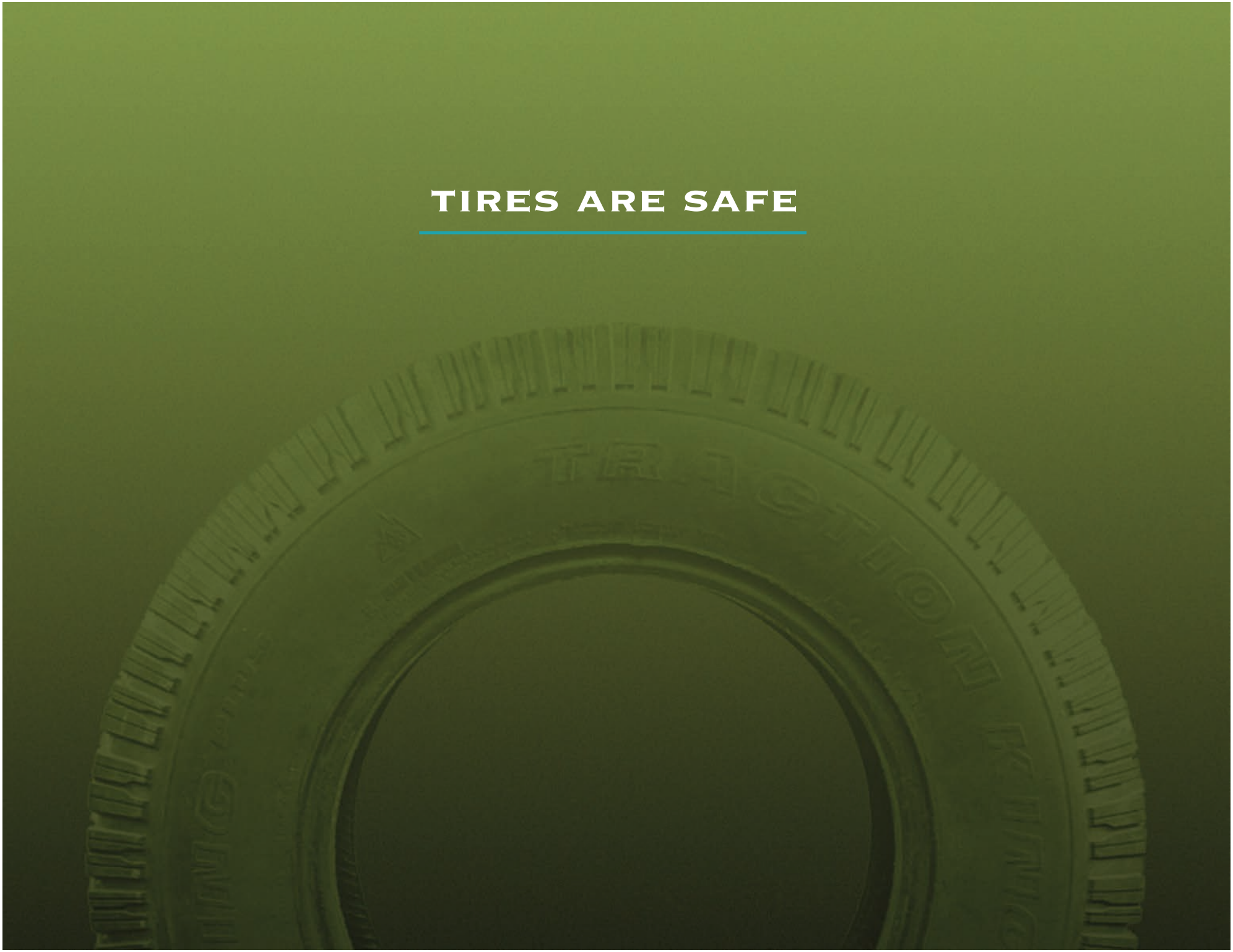
TIRES ARE SAFE



Reusing a tire in an Earthship, where it becomes a beneficial resource, and spends its future in an inert setting is an ideal ultimate use for discarded tires.

Tires are hazardous in piles, not in Earthships.

Several people expressed their concerns linked to the risk that tires emanate toxins in the environment. We were ourselves very skeptical before doing our own research on the subject. There is evidence that tires exposed to extreme heat, sunlight and chemicals emanate harmful substances for the health and the environment. Despite this, reusing tires to build walls is very safe if they are properly reused. You'll see why shortly.

Based on 40 years of experience by the Earthship Biotecture enterprise in house construction using tire foundations and, according to scientific researches on the subject, burying tires represent a minimal risk to human health and the environment.

The rubber, fiber and metal from tires remain stable when buried. They break down very slowly and therefore produce no leachate and no biogas that may contaminate air, soil or water table.

Article by Recyc-Québec

Here is an excerpt from an article by Recyc-Québec, a Quebec governmental society (Canada) which has for mandate to mobilize the population to manage waste materials in an innovative and sustainable manner:

"A tire being buried: The rubber, fiber and metal from tires remain stable when buried. They break down very slowly and therefore produce no leachate and no biogas that may contaminate air, soil or water table." The full article can be found using the following link:

http://www.recyc-quebec.gouv.qc.ca/Upload/Publications/Fiche-pneus.pdf

Letter written by Chris Kaiser

For your convenience, we also highlighted a few elements taken from a letter made by Chris Kaiser (Alamosa, CO, US), a trained and experienced engineer, who is not an Earthship enthusiast or owner, and is used to deal with these issues.

"The proper conditions" for rubber to degrade would be: high temperature, exposure to light, or the presence of strong oxidizing chemicals. None of these conditions exist when a tire is entombed in an Earthship wall surrounded by packed earth.

“Carbon black is obtained by the partial combustion or thermal decomposition of hydrocarbons, it is a known carcinogen and it is found in tires. However, to assess the risks to human health and environment posed by the use of recycled tires in Earthships, one must look at the pathways of exposure, and the state in which this potential contaminant exists. "The proper conditions" for rubber to degrade would be: high temperature, exposure to light, or the presence of strong oxidizing chemicals. None of these conditions exist when a tire is entombed in an Earthship wall surrounded by packed earth.

The water will not become contaminated because carbon black is insoluble in water.

In order for the tires to affect the indoor air quality of an Earthship, the tires must off-gas vapors which must travel from the tires, through the walls, into the living space of the Earthship. The production of such vapors will be proportional to the vapor pressure of the compounds producing the vapors. The vapor pressure of carbon black is less than "0.1 mmHg". This is an extremely low vapor pressure. In other words, this chemical produces almost no vapor. What this means is that the potential for tires to affect indoor air quality will be severely limited by the extremely low vapor pressure of the source chemical.

In order for a tire to affect water quality, it must come into contact with water, and release chemicals into the water. In a properly designed and constructed Earthship, there will be no flux of water through the wall. Therefore, no water will contact the tire. In the unlikely event that water should contact the tire; the water will not become contaminated because carbon black is insoluble in water. Reusing a tire in an Earthship, where it becomes a beneficial resource, and spends its future in an inert setting is an ideal ultimate use for discarded tires."

Tire walls are even more resilient than concrete walls over time and are more eco-friendly. Concrete is now the second most widely used material in the world, just behind water! Thus, it becomes the most polluting building material in the world!

Remember the advantages of building tire walls

- Tires are available everywhere and it is very inexpensive to get them.
- The walls are technically easy to build, allowing you to build without skilled labor, with your family and even with people from your community.
- The reuse of tires will reduce the amount of tires in landfills, which them, since they are exposed to elements, still emanate today.
- Tire walls are even more resilient than concrete walls over time.
- The earth-filled tires are more eco-friendly than concrete, they already have been processed by industries for our cars, while concrete is regularly used for all kinds of constructions, and it is composed of elements which must be processed in various ways. Even if concrete is not the most polluting of materials per kilogram, it is now the second most widely used material in the world, just behind water! Thus, it becomes the most polluting building material in the world!

For more information, please read the following webpage, you will access Mr. Kaiser‘s entire letter plus an extensive study made by the University of Wisconsin-Madison (US) and presented by the New Mexico Environmental Department – Solid Waste Bureau. http://earthship.com/offgassing

You can now look into this on your own…

WHAT ABOUT FIRE DANGER?

It's true that a pile of tires, once on fire, is almost impossible to extinguish. However, a rammed-earth tire wall covered with a minimum of 2" of cob is fireproof since oxygen is not even reaching the tires.

When asked about the threat of fire in Earthship construction, Chuck Potter, environmentalist originally hailing from Dunnville (Canada), demonstrated that the process of filling tires with rammed-earth, combined with a cob covering, eliminates the presence of oxygen. In addition, because tire's high ignition temperature (500 °C as compared to 300 °C for wood) renders spontaneous combustion impossible, experts concluded that all tire fires are intentionally set. And since a tire wall is covered with cob, it would be safe, even faced with an arsonist.

In 1996, after a fire swept through many conventional homes in New Mexico, the interior of an Earthship was completely destroyed, despite this, tire walls were relatively intact. In addition, the Earthship was incomplete because tires were still partially exposed. Owners supposedly rebuilt on the same structure afterwards.

A rammed-earth tire wall covered with a minimum of 2" of cob is fireproof since oxygen is not even reaching tires.