Fiberglass, Mineral Wool and Foam Insulation: the Asbestos of the 21st Century.

Why are Architects Still Specifying Dangerous Insulations?

It's a controversial topic still under debate. Giant corporate industries versus the working person. Historically, we know organizations such as OSHA, the CDC seriously intentioned to help protect workers, those primarily exposed to potential carcinogens. These intentions have been severely tested over many years, well before the first Workers Unions evolved.

We've all seen images of dangerous, egregious working conditions since the onset of the Industrial Revolution. For example, pre-Civil War cotton gin mill facilities where immigrant workers ingested raw, loose cotton fibre in contained environments where airborne cotton fibres filled the air causing *byssinosis*, a lung disease unique to cotton, flax and hemp inhalation. **(1)**

Fast forward to the most commonly-known cause of carcinogenic lung disease; asbestos. A modern-day disaster. On July 20, 2018, a 90 year old steam pipe burst open in New York City's Flatiron District, sending a plum of steam skyward, contaminating local buildings and going airborne. Public officials, often criticized for their lack of disclosure regarding air quality dangers after 9/11, have admitted asbestos is included in the materials released by the steam explosion. As vigilantly as OSHA and other agencies have been in condemning things like lead paint and asbestos, they are still a prominent health risk in our modern society. Being downwind or in an affected area of this steam-drift is being viewed as a serious problem to local residence and building surfaces, automobiles and anything that has fallen into harm's way. **(2)**

An article by the New York Times published in 1984 demonstrates what was then a new focus on mysterious symptoms suspected of being caused by what was then called "stuffy-building" later, "sick-building" syndrome. As reported, *"...toxic chemicals and tightly sealed and insulated buildings of the last decade have been producing medical symptoms that are not easily explained.*

*"We had problems in several buildings where people complained of chest pains, headaches and malaise," said Dr. Allen N. Copeland, deputy commissioner of the state's Department of Health. "But mostly there was nothing to explain the symptoms, except that these buildings were tight due to energy conservation and were poorly ventilated." **(3)***

Researcher are beginning to understand the high-health cost identified by these culprits negatively affecting our homes, schools and work environments. Even sitting in the local movie theatre or place of worship can be hazardous to your, and your children's health.

In 2010, Project Censored reported, "In the early 1970s, a body of evidence linking these ubiquitous fibers to lung disease began to accumulate. In a series of papers published from 1969 to 1977, the National Cancer Institute determined that tiny glass fibers were "potent carcinogens" in laboratory rats and that "it is unlikely that different mechanisms are operative in man." Specifically noted was the cancerous potential of fibrous glass in the pleura of lab animals. The pleura is the outer casing of the lungs; in humans, cancer of the pleura is called mesothelioma and it is caused by asbestos fibers." **(4)**

Fiberglass and Rock (Mineral) Wool

Fiberglass is a synthetic material primarily made of silica, a type of silicon oxide polymer that does not have a melting point and has long been used for its hardness properties. **Silica** is commonly in sand or quartz, and is used to create many types of glass, including window glass, drinking glasses and optical fibers. Microscopic glass

shards are created from sand in special furnaces then coated with ***phenol-formaldehyde and urea-formaldehyde resins***. Historically, the creation of fiberglass for insulation in 1938 by Owens-Corning, became possible when combined with a patented DuPont resin, producing the first fiberglass composite material. During the war effort in the early 1940's, fiberglass was used for airplanes and boats as an ideal low-pressure composite material. As with asbestos, excitement of the overall applications to 'benefit' the public overrode any real long-term health-effect testing. Modern watchdog agencies were spawned as a result of good-intention products that have come back to harm us.

As early as 1941, the U.S. Patent Office issued 353 glass wool products, all man-made thin, needle-shaped rods of glass. These days, over 30,000 products contain fiberglass. Fiberglass is even in cigarette filters with the intention that the shards of glass will abrade and cut your lungs to allow more nicotine to penetrate your bloodstream. Some toothpastes include this process to induce more absorption of fluoride (another toxic material no one discusses). So protecting this industry is vital to many manufacturers, creating a lobbyists dream. The evolution of the Owens Corning miracle replacement for asbestos appears to be the next asbestos-type chapter, suggesting a ban on fiberglass is long overdue, as stated in the article, *Owens Cornings Fiberglas….GlassWool: An Alleged Carcinogen That's Everywhere*. **(5)**

As stated in "The History of Fiberglass" **(6)** *"And, today, almost every family in America has some sort of fiberglass item. Perhaps it is a water faucet, or a shower stall, or a bathtub. Perhaps it is a car, or a boat. Or perhaps there is fiberglass insulation in the walls. The list of uses for fiberglass composites may go on nearly forever.*"

This being true, in conjunction with these well-insulated products comes the fall-out: degradation of non-permanent fiberglass and mineral wool fibers permeating our environments and our air space. This means, we, as humans, also have our share of fiberglass infused into our bodies. Fiberglass is now measureable everywhere in the air, even remote mountaintops. OSHA researchers admit even low-levels of exposure during a working career is sufficient to cause lung cancer.

It's hard to put the genie back in the bottle. Asbestos was gradually phased out in the United States. Its disappearance as an insulation product was matched by the increase in use of fiberglass as insulation wool. From 1975 to 1984, fiber glass production rose an average of 10.4 percent each year. Glass-based fibers insulate our world. The more 'eco-conscious' we become as a society, the more we understand saving energy by well insulating our spaces. But the dangers of these materials, especially as they age and degrade, remains shrouded and unclear. Unlike asbestos, fiberglass effects are harder to pinpoint, primarily because they don't collect in lungs in the same fashion. In 1991, OSHA noted the differences between asbestos and glass-shard materials and decided fiberglass could be classified as a nuisance dust, not considering other data because, since it is different that asbestos, the results could not be the same (meaning it would not cause cancer compared to asbestos).

The principal difference between glass fibers and asbestos fibers is their size and the way the fibers break down. When asbestos is inhaled, their fibers become trapped in the small sacs of the lungs known as alveoli. Because asbestos fibers are long, sharp, and irritating to lung tissue, the alveoli close up and trap them in the lungs, resulting in hardening of the lungs or cancerous conditions. FIberglass flows in and out of lungs, not being encapsulated by the alveoli, although logic dictates a sharp, glass shard will puncture and score any surface easily. Although this is why it is construed to be "not like asbestos", the primary hazard of glass-shard contact of any kind is 'dermatitis' caused by the physical scraping against the skin or internal tissue, and is shown to be associated with emphysema, pneumoconiosis, COPD (chronic obstructive pulmonary disorder) and cancer. **(7)**

Drug companies humorously inundated us with advertisements depicting COPD with a comical elephant sitting on someone's chest as a light-hearted distractions so you will not focus on the debilitating, deadly side-effects of commercial COPD drugs or the pain and suffocation associated with the progression of COPD itself. But, I can assure you from a personal experience with a friend, COPD is wickedly crippling before causing death. These mind-distracting, visually misleading ads are offensive and seem to be designed by corporate drug company shrinks, as if to distract us from the side-effects they are forced to disclose. How annoyingly transparent...

Categorization of fiberglass and mineral wool effects differs little when compared. Lobbying and the prolific use of glass wool begs the obvious questions. As this follows the asbestos or lead paint path, and as fiberglass is so integrated into our everyday lives, a declaration of extreme danger would be commercial suicide without an appropriate, safe substitute. A 1987 New York Times article outlines growing evidence, even at that time, of possible links of fiberglass and lung illness. Citing extensive research by international health agencies, including the World Health Organization, one conclusion by co-author of the *United States epidemiological study,* Dr. Philip E. Enterline concluded *"It may yet turn out that these fibers have to be controlled the way asbestos is controlled."*

In addition to being a physical danger as an irritant, the actual primary hazards associated with fiberglass are the chemicals used during the manufacturing process. ***Styrene monomer***, a raw resin, is catalyzed with an ***organic peroxide***, in combination with **toxic *cobalt compounds*** and ***acetone***, a central nervous system depressant. All these chemical compounds are known health hazards and are flammable or explosive. **(8)** So, while the debate continues as to the carcinogenic properties of glass wool fibers, it seems the the focus on the body's ability to exhale glass shards overrides the overall effects of the chemical by-products also contributing to the irritation factor, including deadly effects on our nervous systems and DNA.

In 2012 a Certified Hazardous Materials Supervisor whistleblower exposed a quote sent to a non-profit anti-fiberglass activist group from a 1974 position paper by Dr. Mearl Stanton of the National Cancer Institute, which stated: "asbestos causes cancer not because it is asbestos, but because it is a *Respirable Durable Fiber (RDF)*. **RDFs completely unrelated to asbestos such as fiberglass and rockwool are equally carcinogenic**." **(7) As early as 1978,** A Japanese medical research study reported the first evidence that fiberglass may be responsible for causing lung disease in workers similar to diseases caused by asbestos. At that time, about 200,000 workers in the U.S. were exposed to fiberglass in the manufacturing of about 30,000 products.**(9)**

Fast forward to 2016: the worldwide market for fiberglass was 7.21 billion U.S. dollars. According to the estimation of analysts at Transparency Market Research (TMR), the market will expand at a CAGR of 4.7% from 2017 to 2025 and reach 10.8 billion U.S. dollars by the end of 2025. The hot new market for fiberglass is automobiles, taking a whopping 25% of fiberglass-use shares globally, with the U.S. using 30% of the global fiberglass market. Now we can add your automobile's interior to the list of spaces being contaminated by fiberglass dust! It stands to reason, this powerful product category is not going to go quietly. **(10)**

Anyone attempting to enter this market with a safe, effective, cost-comparative replacement, even just for the category of insulation, will have a David and Goliath situation. The result, however, is that of stepping into expanding markets looking for non-toxic solutions, the next generation products with no health consequences. A step in that direction could be invaluable to us all.

As a bonus, there is another danger associated with both mineral wool-based products and isynene foam surfaces: mold.

So what do we do now regarding these airborne shards and damaging fibers surrounding us? Investigation into the current level of product-ability offered indicates there are other core materials which, with new technology processes, offer a safe replacement, at least for one of the biggest, most egregious areas: insulation. There is a Pink Panther (for those of us old enough to have enjoyed his antics) video of Mr. Panther in a hospital bed, dying. Mrs. Pather pleads with the doctor about his condition, but is told, unequivocally, that Pink will die because his lungs are filled with Owens-Corning fiberglass, the punchline being that he won't burn in hell with all that

Owens-Corning fiberglass in his body. She simply sheds a single tear as he checks out. Comical, yet poignant. Compare to their Pink Panther advertisement. It's one of the first cartoon characters used to distract us from dangers, as per the COPD elephant. Message sent. (ref. 9)

Fast forward to the current age of skepticism; enough has crossed our paths that we query any approval or assurances offered by big-pharma, Monsanto or their equals. Now we are moving to the age of realization that we, the people, are responsible for our environments, our habitats and affecting those systems that affect us. No more blame-game. But fiberglass, mineral wool and other so-called 'non-carcinogenic' materials have taken liberties with our lives. Integrated into even the zesty goo on our toothbrushes, we are becoming more aware of what we are being subjected to in our daily, product-consuming, conglomerate-supporting lives.

Out with the old; in with the new. Interestingly, the replacement has been staring us in the face for some time, yet we gravitate towards products sold to us by, well...you know.

Ref 1: https://thorax.bmj.com/content/59/12/1095
Ref 2: https://www.nytimes.com/2018/07/20/nyregion/what-is-asbestos-and-health-risks-steam-pipe-explosion-nyc.html
Ref 3: https://www.nytimes.com/1984/02/12/nyregion/indoor-pollution-getting-new-attention.html?module=Search&mabReward=relbias%3As%2C%7B%222%22%3A%22RI%3A17%22%7D
Ref 4: http://projectcensored.org/16-fiberglass-the-carcinogen-thats-deadly-and-everywhere/

Ref 5: https://www.bigclassaction.com/lawsuit/fiberglass.php
Ref 6: http://www.pslc.ws/macrog/mpm/composit/fiber/fibeglas/history.htm;
Ref 7: https://www.naturalnews.com/035686_fiberglass_lung_diseae_cancer.html
Ref 8: https://www.safetymanualosha.com/is-fiberglass-a-health-hazard/
Ref 9: https://www.washingtonpost.com/archive/politics/1978/12/18/fiberglass-tied-to-asbestos-type-lung-disease/b59cc085-3c30-4780-a899-a4dd51c6e225/?noredirect=on&utm_term=.85d58aaca631
Ref 10: https://www.transparencymarketresearch.com/fiberglass-market.html

https://docs.google.com/document/d/1ITZt8t1a50fS_AgvJ4lDgn2w_RJX19bt8sDqREifmAU/edit

Ref. 6: https://www.thomasnet.com/articles/materials-handling/fiberglass-safety-health-concerns; https://www.naturalnews.com/035686_fiberglass_lung_diseae_cancer.html

Ref. 9: https://video.search.yahoo.com/yhs/search?fr=yhs-pty-pty_speedtest&hsimp=yhs-pty_speedtest&hspart=pty&p=pink+panther+owens+corning+family+guy#id=4&vid=960e5dd651ea054bfce3eb846bc359d9&action=click; https://video.search.yahoo.com/yhs/search?fr=yhs-pty-pty_speedtest&hsimp=yhs-pty_speedtest&hspart=pty&p=pink+panther+owens+corning+family+guy#id=3&vid=3e9aa38d32a6eaec94bd28ea46dffc8d&action=view