

DEFECTIVE DRYWALL: THE NOT-SO-GREAT WALL OF CHINA

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*"The more enlightened our houses are,
the more their walls ooze ghosts."*

So wrote Italian writer and journalist Italo Calvino (1923-1985). Were he alive today, he could accurately have written, "The less enlightened our manufacturers are, the more their walls ooze gas" — drywall, in particular. Specifically, sulfide gases and other chemicals have been leaching from a particular line of drywall manufactured in China.

A group of homeowners in the case of *Vickers et al. v. Knauf Gips KG et al.* have made such allegations in a class action complaint recently filed in the U.S. District Court for the Southern District of Florida. The plaintiffs claim that problem drywall installed in their homes contained contaminated gypsum. Over time, the contaminated gypsum within the drywall broke-down into sulfate ions and chemically transformed into hydrogen and other sulfide gases damaging their home, their contents, and their health.

The following is a synopsis of the claim and their ramifications for homeowners and their insurers.

THE TARGET DEFENDANTS

The *Vickers* complaint names manufacturers Knauf Gips and Knauf Plasterboard Company, Limited; suppliers Banner Supply Company and Roth Chilt International Limited; and builders Taylor Woodrow Communities, Tousi Homes, Inc., and South Kendall Construction Corp.

Knauf Gips is a German corporation and a leading manufacturer of drywall building materials. In 1995, Knauf began manufacturing drywall in China and established three plasterboard plants in Wuhu, Tianjin, and Dongguan. Knauf Gips sold the drywall to various suppliers in the state of Florida.

Banner Supply and Roth Chilt purchased the drywall because of a shortage of construction materials due to an increased housing market and damage caused by recent hurricanes.

In excess of 550 million pounds of drywall came into the United States from China between 2004 and 2006. This is enough drywall to construct approximately 60,000 residential homes. Nearly sixty percent (60%) of the Chinese drywall came in through the Florida ports: Miami's port received about 100 million pounds; Port Everglades received about 80 million pounds; and Tampa received about 50 million pounds. Port Manatee, Pensacola, Port Canaveral, and Jacksonville also received a significant amount of drywall.

To understand how the drywall can be defective, it is helpful to understand how it, and gypsum, are made.

MAKING DRYWALL AND GYPSUM

Drywall is commonly known as gypsum board, wallboard, plasterboard, rock lath, sheetrock, and gyproc. Drywall is typically available in 4 ft (1219 mm) wide sheets of various lengths. Newly formed sheets are cut from a belt, the result of a continuous manufacturing process. The most commonly used drywall is one-half-inch thick but can range from one quarter (6.35 mm) to one inch (25.4 mm) thick. A drywall panel is made of a paper liner wrapped around an inner core made primarily from hardened gypsum plaster. Gypsum is created both naturally and synthetically.

Natural gypsum is a white to transparent mineral that can sometimes look grey, brown, or pink. Gypsum rocks are sedimentary rocks made up of sulfate minerals and formed over millions of years as a result of evaporating water in basins all around the world.

Synthetic gypsum is manufactured with byproducts of coal combustion power plants. Coal combustion byproducts (“CCBs” or “CCPs”) are inorganic residues that remain after pulverized coal is burned. The primary CCBs used in drywall result from a utility’s attempt to remove sulfur from flue gases.

Many utilities that burn pulverized coal to make gypsum have installed flue-gas-desulfurization (FGD) equipment. Flue gas desulfurization is a chemical process to remove sulfur oxides from the flue gas. Various FGD methods have been developed that chemically combine sulfur gases released in coal combustion by reacting them with a sorbent, such as limestone or lime. As the flue gas comes in contact with the calcium salts, sulfur dioxide reacts with the calcium to form hydrous calcium sulfate, otherwise known as gypsum.

The gypsum is then “calcined,” or partially dehydrated by heating. When gypsum is heated, it loses about three quarters of its water and becomes hemihydrate gypsum which is soft and can be easily ground to a powder called hemihydrate gypsum plaster. The gypsum powder is then mixed with water to form a paste or slurry. The paste or slurry is typically mixed with fiber (usually paper and/or fiberglass), plasticizer, foaming agent, potash as an accelerator, starch or other chelate as a retarder, various additives that increase mildew and fire resistance (fiberglass or vermiculite), and water.

The drywall is then formed by placing the paste or slurry between two sheets of heavy paper or fiberglass mats. When the core sets, it is dried in a large drying chamber and becomes rigid and strong enough for use as a building material. Drywall may consist of two other materials with sulfur content: alkyl ethoxy sulfates as foaming agents and lignin or naphthalene sulfonates as dispersing agents.

The gypsum used in the defective drywall contains various contaminants that cause the emission of sulfide gases. According to published reports, some independent environmental testing firms and building experts have said the source of the drywall problem is waste materials from the scrubbers of coal-fired power plants used to make the drywall in China.

THE STUDIES

According to an independent consulting firm hired by a Miami-based builder, there is little doubt that the drywall in question is causing corrosion in many residents' homes, including metal coils in air-conditioning equipment and other household equipment. One of the managing principals of the independent testing firm stated that:

“We have definitely identified that a combination of sulfide gases are the cause of the corrosion of the coils. The substances we’ve found are well known to cause that kind of corrosion.”

The firm’s December 2008 results found three sulfide gases: carbon disulfide, carbonyl sulfide and dimethyl sulfide. Hydrogen sulfide was found in previous testing that the company conducted on the Defendants’ drywall:

“Our previous studies indicate, however, that carbon disulfide, carbonyl sulfide, and hydrogen sulfide are gases that can be associated with emissions from Chinese drywall.”

DEFENDANTS’ RESPONSE

Knauf admits there is “problem drywall” but claims that it only learned of the problem in 2008, that the levels are not harmful, and that the source was a particular mine, not one of their own plants. According to a Knauf statement in 2009, the company:

“is doing its own investigation, and believes the problem drywall came from a specific [gypsum] mine, which also supplied other manufacturers.”

Knauf stated:

“The sulfur compounds detected in testing in homes have been found at no greater levels than air outside homes or in soil, marshes or the ocean.”

Knauf also stated:

“Until last year in Florida, no complaint had been raised and no product had been rejected because of odor or impacts to copper in the nine years of [Knauf Tianjin’s] operation.”

But sources say Knauf received complaints from builders and contractors about “rotten egg” smells coming from its Chinese-manufactured drywall as far back as 2006. In November 2006, in response to reports of odors associated with its drywall, the company hired the Center for Toxicology and Environmental Health, L.L.C. (CTEH) to conduct an air quality investigation in five homes in Florida. Knauf’s 2006 testing revealed its product released detectable levels of various sulfur containing compounds that were above background levels. In particular, Knauf’s testing revealed the presence of iron disulfide from its Chinese Drywall as the likely source of the sulfur smells. Knauf’s testing agency declared:

“Th[is] data indicate[s] that certain naturally occurring sulfur-containing compounds can be emitted from the

Knauf Tianjin product at concentrations higher than present in background air.”

One importer acknowledged in published reports that the defective Chinese Drywall was “well known in the industry” by 2007.

THE DAMAGES

The defective drywall is alleged to emit various sulfide gases and other chemicals through “off-gassing” that creates noxious “rotten egg-like” odors, and causes corrosion of air conditioners, refrigerator coils, microwaves, faucets, utensils, copper tubing, electrical wiring, computer wiring, electrical appliances, and other metal surfaces, household items, and building materials. At the present time, there is no known repair that will correct the defect in the drywall, other than its removal.

Along with the property damages, some of the gases emitted from the drywall, such as hydrogen sulfide (“H₂S”), can cause serious personal injury. H₂S is considered a broad-spectrum poison, meaning it can poison several different systems in the body, although the nervous system is most affected. The

toxicity of H₂S is comparable with hydrogen cyanide. It forms a complex bond with iron in the mitochondrial cytochrome enzymes, thereby blocking oxygen from binding and stopping cellular respiration. Exposure to lower concentrations of sulfides can result in eye irritation, a sore throat and cough, nausea, shortness of breath, and fluid in the lungs. Long-term, low-level exposure to sulfides has been associated with fatigue, loss of appetite, headaches, irritability, poor memory, and dizziness. Chronic exposures to low levels of sulfides has also been implicated in increased miscarriage and reproductive health issues.

FUTURE CLAIMS

Drywall distributed by National Gypsum, USG, L&W Supply, and Rothchild International Limited, may also have similar defects as those discussed above. Cozen O’Connor has been successfully handling material failure claims and product defect claims for decades, and we stand ready to address this new loss scenario. We are available for further consultation to discuss any recovery issues that you may be confronting.