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Mass. lawmakers aim to offer homeowners relief from crumbling foundations

Some 2,000 central Massachusetts homeowners may get state help with their crumbling foundations if a proposal to set aside funds to remove and replace the concrete passes

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Key Points

- Pyrrhotite, an iron oxide mineral that breaks down over time, in manufactured cement has been identified in the foundations of homes built between 1983 and 2015, mostly in Central Mass.
- There is no permanent fix for pyrrhotite foundations that begin to crack and deteriorate. The only solution is to replace the foundation.
- Massachusetts lawmakers have co-sponsored a bill that requires the testing of homes for the presence of pyrrhotite as part of the home inspection process.

Even as Central Massachusetts homeowners wrestle with the possibility the very foundations of their “American Dream” could crumble underneath their feet, state legislators are seeking ways to identify and remediate homes built using pyrrhotite-contaminated cement.

So far, the problem with crumbling foundations has been identified in 1,500 to 2,000 homes, all built between 1983 and 2015 in certain sections of Massachusetts.

More: [Homeowners fear crumbling home foundations may become larger issue in Central Mass.](#)

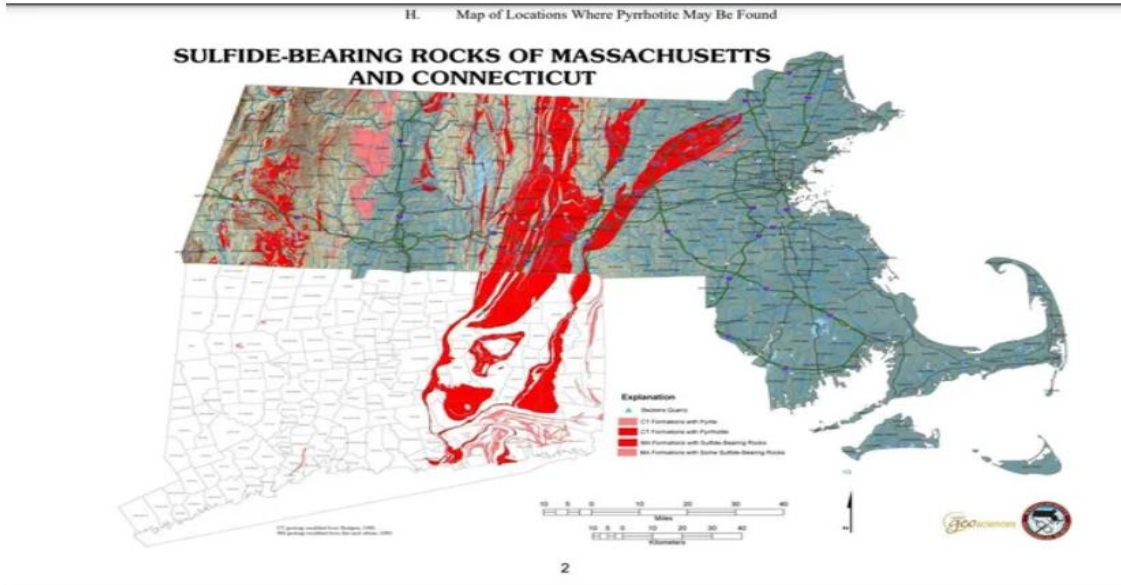


Gary Bellows uses carbon fiber to repair foundation cracks in the basement of his Rutland home. Cases of pyrrhotite-contaminated concrete foundations affect mainly Connecticut and Central Mass. towns, forcing homeowners to pay hundreds of thousands of dollars to repair or replace their foundations. *Allan Jung/Telegram & Gazette, File*

The cement mixture that was used in the foundations contained tainted aggregate mined in a Willington, Connecticut, quarry and sold by the J.J. Mottes Concrete Co., according to a [Connecticut governmental website](#) and the [University of Connecticut](#) detailing the problem.

The culprit is pyrrhotite, an iron oxide and a naturally occurring mineral. It is prevalent in the Acadian metamorphic belt in the geological formation known as Brimfield Schist.

“It’s an innocuous mineral, it’s not caustic, not dangerous to human health,” said Adam Tracy, president of the [A-1 Foundation Crack Repair Inc.](#), a company that has been repairing foundations across New England for two generations.



Map of where pyrrhotite could be found in Massachusetts *Crumbling Foundations Final Report*

Innocuous except that the mineral “rusts” (it is composed of iron and sulfur) when exposed to water and air, Tracy said.

The mineral expands when exposed to moisture, cracking the foundation. It also becomes more acidic and delaminates the cement, making it less effective at holding together the different materials used to make concrete.

The iron rusts to a stable oxide with the mottled orange-yellow color of fire, and the sulfur becomes a chalky residue resembling disintegrated plaster. One byproduct of this reaction is sulfuric acid.

Ticking time bomb

Tracy called it “a slow process” and “a ticking time bomb” that can take more than 15 years to become evident. It can first be detected with the appearance of cracks and white powdery substance in foundation walls and floors.

There is no fix, no amount of patching and painting, that can stop the process. The only thing that works is to remove the foundation and replace it with a new one, a daunting and expensive process.

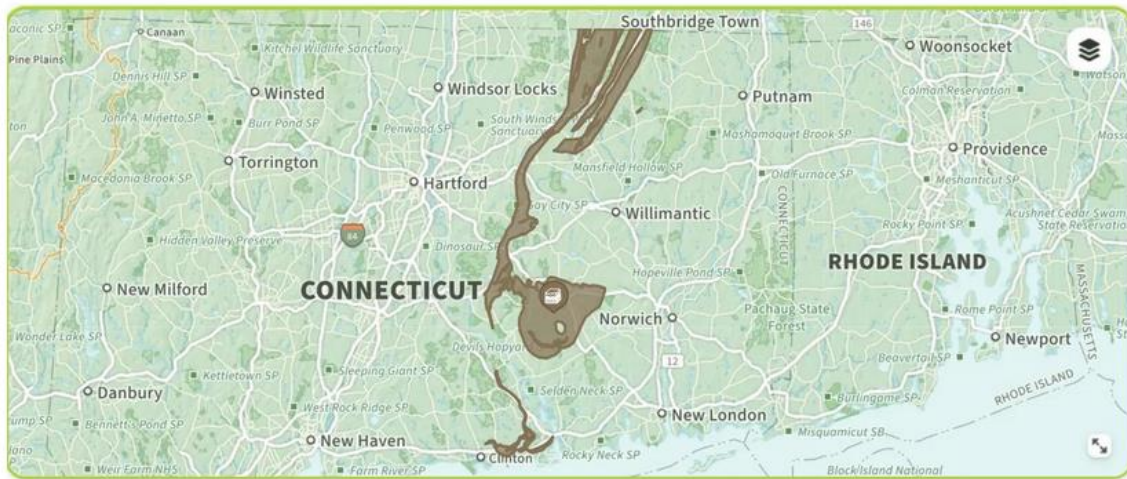


Telltale cracks in the foundation of a home in Holden. T&G File Photo

Experts agree the procedure could cost between \$250,000 and \$450,000, and with the damage and loss of equity, refinancing a home to remediate it can become next to impossible.

More: Crumbling, cracking foundations: Testing for pyrrhotite can be reimbursed

This is where Worcester-area state Sens. Ryan Fattman, R-Sutton, and Anne Gobi, D-Spencer, are stepping in. The legislators are co-sponsoring a bill that would require testing of homes for the presence of pyrrhotite at the time of sale as part of the home inspection process.



The geological vein that runs through New England where pyrrhotite can be found. *Courtesy Image*

“This is the largest investment people make in their lifetimes, the purchase of a home,” Fattman said. “When this happens, the home is rendered financially useless.”

More than 35,000 Connecticut homes were built using the suspect mix and the state took steps to alleviate the financial burden on the owners. Connecticut created a fund to help mitigate the cost of jacking up a structure to remove and replace its foundation.

Fattman would like to see Massachusetts emulate its neighbor’s remediation efforts.

Proposal to test quarries, foundations

In the Massachusetts bill, legislators have proposed setting aside funding to pay for testing foundations. The sponsors are also advocating using federal American Rescue Plan Act funds to create a kitty that could be tapped on a rotating basis by homeowners for remediation.

The state has some \$2.9 billion remaining in its coffers of ARPA funds, and Fattman suggested setting aside \$350 million to be allocated to homeowners as needed.



Cases of pyrrhotite-contaminated concrete foundations dot Connecticut and Central Mass. towns, including in Grafton, forcing homeowners to pay hundreds of thousands of dollars to repair or replace their foundations. *T&G File Photo*

Included in the bill is a component that would require Massachusetts quarries to test for the mineral before using mined stone in cement.

“The testing component at quarries is so important,” Fattman said. “It’s in a quarry’s best interest to test.”

The mineral, a vein of it running through Central Massachusetts and stretching from Connecticut to Canada, was used as part of the materials in concrete: coarse aggregate, fine aggregate, water and cement. The pyrrhotite is found in the coarse aggregate. The only way to confirm its presence is to take samples from a foundation and test it in a laboratory.

“Only a very low concentration of pyrrhotite is needed to cause an issue,” Tracy said, explaining it can be less than 1% of the mix.

For Gobi, testing as part of the sale process is key, consumers must be safeguarded.

Realtor Andrea Castinetti of [Castinetti Group](#) said the industry is in favor of the testing requirement.

“We’ve had a lot of seminars on this topic,” Castinetti said of the pyrrhotite problem. “We have to protect ourselves as agents and protect the buyers. It’s the right thing to do.”

Jameson Malgeri, president of the [American Society of Home Inspectors](#) New England chapter, said testing for pyrrhotite would require specialized training, just as testing for radon and wood-damaging insects requires special training and certifications.

“Home inspectors are generalists, they inspect visually,” Malgeri said, explaining inspectors note possible issues with a home: framing timber damage that could indicate insect infestation or other problems that would require specialists to pinpoint exactly.

The ASHI New England has planned a special presentation about the pyrrhotite problem for later this month. Tracy will be a featured speaker at the event.

Massachusetts has a [home inspector certification program](#) and grants licenses for those taking the required courses and examinations.