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Industry News

Current issue

Past issues

News update

Resources

News release

Media kit

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Judge throws out 'junk science' in sulfate attack case

Concrete suppliers prevail

In a landmark ruling, an Orange County judge recently dismissed the standard evidence used by construction defect lawyers in an estimated \$1 billion worth of concrete foundation defect lawsuits.

The judge ruled in late December that plaintiffs seeking \$5,238,205 in damages in a concrete sulfate attack case failed to demonstrate that the defendant concrete suppliers had supplied defective concrete or that the concrete had subsequently been damaged by external sulfate attack.

Moreover, as defendant National Ready Mix Services Co. served statutory settlement offers on the plaintiffs in April 2004 and in June 2004, which were rejected, National may now seek to recover the expenses incurred for expert witnesses from the plaintiffs.

A cornerstone of the ruling was the judge's earlier exclusion of five kinds of tests that were submitted as evidence by the plaintiffs' experts. The plaintiffs submitted these tests in their bid to claim damage to the concrete foundations of 25 homes in the city of Mission Viejo, Calif., arguing that the damage resulted from sulfate chemicals in soils that are in contact with the concrete.

"The plaintiffs' attorney tried to use junk science to create the appearance of damage where there is none," said William Ingalsbe, attorney for National Ready Mix Services Co., one of the concrete supplier defendants in the 10-month-long case.

"The bottom line is that this lawsuit, and so many others like it, is based on testimony that arises from unusual and inappropriate tests that are not based on accepted methods. Unfortunately, they are driving up the cost of housing in an already high-priced market."

The defendants in the case, *Castron v. Fieldstone*, include two concrete suppliers, National Ready Mix Services Co. and Standard Concrete Products, Inc. Ingalsbe said the plaintiffs in the case include Orange County homeowners who, like most homeowners, may not have the sophisticated training needed to evaluate the technical merits of the case. However, the law may force them to disclose the lawsuit and the damage asserted by their attorneys, should they sell their homes.

At the heart of the lengthy string of lawsuits with similar claims is whether or not concrete foundations have, in fact, been damaged or weakened by sulfates in the soil, and, if so, whether they endanger the structure itself.

In his ruling on this case, Judge David C. Velasquez of the Orange County Superior Court Civil Complex Center, said the plaintiffs "did not carry their burden to prove . . . that the concrete supplied in the construction of their homes . . . was defective," or "that National (Ready Mix Services Co.) was negligent in the designing or manufacturing of the concrete." Standard Concrete Products Inc. settled the claim after Velasquez heard weeks of pretrial testimony and found that much of the plaintiffs' evidence would be restricted from the main trial as it failed to satisfy generally accepted scientific standards.

The plaintiff had argued that the supplier used excessive water when mixing the concrete and that the wrong type of cement was used. However, the judge further concluded that: "There is insufficient evidence to prove the concrete supplied by National was improperly proportioned ... or contained a type of cement unsuitable for the in-service conditions. There is insufficient evidence to prove the concrete supplied by National was damaged by external sulfate attack."

Moreover, even though the judge had earlier denied the defendants' motion to exclude Scanning Electron Microscopy as inappropriate evidence, he ruled that the results did not support the plaintiff's allegations.

"[M]any of the micrographs which plaintiffs proffered as key examples of cracking due to sulfate attack lacked the classic appearance of sulfate damage."

In excluding the other evidence, Velasquez found that the tests used to derive the evidence submitted by the plaintiffs did not meet the so-called "Kelly rule," which is based on three separate considerations:

- Do the methods have general acceptance by the scientific community?
- Were they performed by qualified experts in the relevant technical discipline?
- Were they performed correctly, by the appropriate scientific method?

When a method is veiled in the clothing of objective science, Ingalsbe said, jurors can be overwhelmed by it, perhaps feeling unable to evaluate complex data. California law provides that for scientific evidence to be presented to a jury, it must have wide acceptance for the purpose to which it is put, it must be presented by a qualified witness and it must be performed properly. Lacking such controls linked to general scientific acceptance, juries may be inappropriately swayed by expert opinion based upon junk science, potentially leading to unsupported conclusions.

The defendants say the judge's decisions could prove to be a turning point in what has become a major construction industry debate in California and a contributing factor to the state's affordable housing crisis. Since the mid-1990s, some estimate that more than \$1 billion have changed hands in related settlements and verdicts, principally based on allegations of sulfate attacks on concrete foundations. The plaintiffs' attorney in this case notes on its website that clients have received more than \$350 million between 1993 and 2005 and devotes several pages to sulfate attacks and other potential defects. Previous, but similar, "sulfate cases" have been based on arguments found by the current court, and by courts in other trials, to be lacking in scientific merit.

The specific tests in question include: the STADIUM/SIMCO computer model used to predict the extent of distress expected over time in concrete due to sulfate attack; the water vapor test and rapid chloride penetrability test; vapor emissions testing; and microscopic and other means for determining the water-to-cement ratio of hardened concrete.

Several of the tests in question rely on electron microscopy and other assorted means for identifying defects in concrete. These include the water drop test, examination of florescent dye epoxy-impregnated concrete samples, the scratch hardness test, and related visual characteristics.

"In my view, each of the techniques used by the plaintiffs' experts was a subjective and non-standard method used simply to justify their predetermined and biased opinions," said Geoffrey Hichborn Sr., president and CEO of Hichborn Consulting Group, a civil engineer and concrete materials specialist hired by one of the defendants. "Good techniques require standardized, objective and reproducible methods that will lead to logical conclusions.

"In a past lawsuit and under oath, some of the plaintiff's experts were unable to tell the difference between a concrete sample and a Tums tablet using one of their primary examination tools, a Scanning Electron Microscope equipped with Energy Dispersive X-Ray Spectroscopy," Hichborn explained. "Further, with that impressive looking, wonderful scientific instrument, they could not tell the difference between a diamond and a lump of coal. This is because the plaintiff experts who are frequently retained on behalf of homeowners often use inappropriate tools to form their opinions. How can a jury possibly evaluate whether the technology is accepted for the purpose they use it?"

Judges must step in to exclude from the jury's view evidence not based upon accepted methods for the forensic examination of concrete.

The defendants, on the other hand, have conducted tests consistent with industry standards to determine whether damage to the concrete has occurred. In every one of these cases, the tests have concluded that the superficial scaling cited by the plaintiffs did not constitute structural damage.

In 2001, in a case with similar "sulfate damage" claims, *Spitz v. YL Brighton Associates I*, Judge Stuart T. Waldrip, also in the Civil Complex Panel of Orange County Superior Court, disallowed these same testing methods, as well as other tests that were not used in the present case. However, that does not preclude plaintiffs' attorneys from attempting to use the same methods in new cases.

This article appears in the [February 2006 issue](#) of Concrete Monthly.



Other articles in this section

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- ▶ [Mack puts Bendix stability system on cement mixer trucks](#)
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