

Saving “The Scream”

- 1 Edvard Munch’s 1910 version of this iconic artwork has rarely been displayed since 2006 because the painting’s cadmium sulfide pigments are so fragile. Cadmium yellow brushstrokes in the sky and central figure have faded to off-white, and thick paint in the lake is flaking off. To prevent further decay, the Munch Museum in Oslo almost always keeps “The Scream” in storage, under carefully controlled lighting and about 50 percent humidity.
- 2 Now, a chemical analysis of the painting shows that moisture is the main reason for the deterioration, while light plays only a minor role, Letizia Monico, a chemist at the Italian National Research Council in Perugia, and her colleagues report online May 15 in Science Advances.
- 3 Researchers analyzed microscopic flakes of paint from “The Scream” along with paint samples with similar chemical composition that were artificially aged in the lab.
- 4 X-ray probes of the paint samples revealed cadmium sulfate, a breakdown product of cadmium sulfide, in paint flecks from “The Scream.” Cadmium sulfate also showed up in artificially aged paints that were exposed to at least 95 percent humidity in both light and darkness, but similar samples exposed to light in 45 percent humidity didn’t show signs of decay. This suggests that moisture is the main culprit in aging “The Scream,” and that although the painting may be fine under normal lighting, it should be kept at 45 percent humidity or below.
- 5 This new understanding of the artwork may inform the preservation of other paintings by Munch’s contemporaries, such as Matisse and Van Gogh, which also contain decaying cadmium sulfide pigments. But Monico cautions that every painting is a unique, complex chemical landscape, so conservation strategies must be devised on a case-by-case basis.



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