The Coating Chemist as Expert Witness

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Overview

The consulting chemist may be contacted by a lawyer, insurance company, or coatings company for assistance in legal matters. Typically, the case will deal with the failure of a coating in a specified test or application, or the alleged theft of a coating formulation. In either type, the lawyers, judge, and perhaps a jury will need at least two things from the expert witness: instruction and judgement.

Introduction

The call for a chemist to serve as a technical expert in legal matters is fairly common and the expert must address various questions in the field of polymer and coatings science. The referrals often come from: a coatings or chemical company, who know of the chemical expert from published work or previous work as a consultant; lawyers with whom the expert has worked; legal expert databases (such as ASTM, ACFE, etc.); or referral services (such as Expert Resources near Chicago).

The lengthy lawsuit process involves several distinct stages, including the following:

1. Gathering evidence that a potential lawsuit might be a remedy for the plaintiff.
2. Filing the lawsuit, stipulating the harm, and estimating damages resultant therefrom.
3. Engaging in the “discovery” process involving a gathering of evidence from the other side to determine its validity, and construct arguments against it. This may involve taking deposition(s) of witnesses (participants in the lawsuit or their technical experts) to find out their qualifications and their opinions.
4. Preparing final arguments.
5. Trial.

The expert may be engaged at any point in the process, but the earlier the better for the expert and the case. Only in the last phase does the expert actually become a witness, since the job of the witness is actual testimony.

Discussion

Upon receiving a call regarding a case, I divide the process into three basic stages: (1) Assessing the science underlying the case to determine if the technical argument has merit, (2) Instructing the lawyer(s) about the science and what it means, and (3) Making the actual deposition/giving testimony.

First, the expert has to examine the evidence for the case to see if the case has merit. In several instances, a paint company or an insurance company for the paint manufacturer contacted me to look at the problem and write a report of my findings. This often calls for a visit to the site of the painted surface and discussion of the paint application with the painter (if available) and the site owner/manager about use or exposure.

My first cases of this sort were as the California troubleshooter for Olympic Stain, a national wood coatings company that was located near Seattle, Washington. In seven cases over about a five-year period, I only found one where a paint had gone bad in the can before application. Sampling the gummy surface submitted for their analysis showed the drying oil had gelled before it was applied. In all other cases, the application was at fault, or the expectation was too great. The latter case involved a pink acrylic latex coating that had been applied to stucco 17 years earlier. Cracks had appeared, and had been repaired and repainted with the same paint. The colors did not match and the customer complained. I did my best to explain that sun fade in California, especially after 17 years, was to be expected.

The worst case of faulty application was a pigmented oil-based stain applied to siding. The painter had made up short board panels to demonstrate the colors of a variety of stains on wood scraps from construction of the new house. He had rubbed in several coats on each board to make sure of good coverage, however, he had spray painted the siding on the house after the construction was completed. Their complaint was that the siding did not look like the rub-up samples. I described the movement of pigment in rubbing, and the stationary pigment in spraying (after it hits the siding), and that made both owner and painter mad. So much for science on a micro scale.

Many cases end at this point with a simple report to the insurance company or other client. They may decide to pay the claim or otherwise remedy the situation. Some years ago, I was

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Vol. 71, No. 894, July 1999 79
called into a condo complex by a homeowners’ association to examine a problem of brown paint streaks on an unpigmented stucco. The contractor had sub-contracted to some painters to put a dark brown latex paint on the window/door frames after construction was complete. When the job was finished, and the new homeowners had moved in, several complained that there were “dirty” streaks from some windows (no more than five percent of the windows) that they wanted cleaned up. The contractor could not wash them off and was forced, via legal threat, to find out what was wrong and remedy it. I was called in by the homeowners’ association to help the contractor.

Examination showed that the stucco had the dark iron oxide pigment particles embedded within the stucco. The condo complex is located on a San Francisco Bay frontage area, so I asked the contractor’s representative when the painters stopped their painting during their work day. It turns out they stopped when the daylight was just about gone. Now, there is an evening fog that comes through the Golden Gate at the very time they stopped. I hypothesized that the last paint application was diluted by the condensing fog, and some pigment had drained off that surface onto the stucco.

My report, along with a small bill for services, went out to them, but it did not end there. They called me back for two things. The first was about a trial they had commissioned from a local testing lab for several thousand dollars. It said essentially the same thing I did, without the rationale I had proposed. They were analytical chemists with no latex or paint background, so they could not rationalize how it happened. Furthermore, they could not recommend a remedy. The homeowners’ second point for me was to come up with a remedy.

First, I suggested a drastic chemical wash that might not dissolve the pigment, but might hurt the surface and the plants beneath on the landscaped ground. The second option was to lightly sandblast (low pressure, soft mineral like talc) to “brush” off the staining. They had never heard of such a thing, but they offered to fund a trial. I bought a small low-pressure sand blaster and a bag of talc. I set up the demonstration to show how easy it would be. I carried in a pound of a standard heavy duty mineral for sandblasting to demonstrate the reason for using the soft mineral. I cleaned up one wall’s stains in a matter of about 15 minutes with the talc at about 40 psi air pressure. I also showed, on a spot hidden by bushes, the sort of damage one could do with the high pressure and hard mineral. The homeowners’ association bought the sand blaster and talc from me. Both the construction company and the homeowners’ association felt my fees and demonstration were enough to stop the lawsuit, and everyone was happy.

Often, the cause of damage is not so obvious, so some analysis or testing may be needed. In those cases, I call a local testing or analysis laboratory to help me determine whether the problem can be demonstrated or rationalized through some analytical technique. I was retained in one case where outdoor wooden furniture coated with an oil-alkyd formulation was failing on outdoor exposure after only a few months of the mid-western sunshine and rain. I was given sample chair seats that were bare of coating, with the statement that the coating company claimed it was not their coating, with analytical results confirming no oil-alkyd was present. Their coating had a unique combination of biocides present (most companies use only one), so detecting the biocide pair was the key. I had a lab look at the screw holes and the glue lines for the biocides, and they found them. The coatings company settled out of court.

When the lawsuit cannot be so quickly resolved, the second stage is to instruct the lawyer in the case about the science involved so we may proceed further with the suit. Here, I have made a judgement that the scientific evidence in the case has merit for the side that retained me. The lawyers know next to nothing of science, in most cases (the exceptions are some patent lawyers who have technical or engineering degrees), so we have to find a common language to describe what a polymer or a paint is in their terms.

The most common descriptions I use for polymer or colloid systems come from cooking. I relate a polymer to a plate of spaghetti, while a plate of macaroni is related to the monomers. You can pick up the spaghetti from the bowl in your hands somewhat separated, and few if any strings fall out, while attempting to do that with macaroni has it all over the floor. The wet cooked spaghetti behaves as an elastomer (mobility), while drying that spaghetti will make it behave as a plastic. Stapling the wet spaghetti strings makes it act as a crosslinked rubber. Lawyers and juries can envision the parallels on a microscopic basis quite easily. I compare colloidal systems to things they know such as milk, pudding, gelatin, and gravy.

The lawyer, after his instruction, must frame a set of questions to ask in the courtroom, so the judge (and jury, if needed) can get the same training painlessly, but thoroughly enough, to be able to make decisions about the importance to the arguments. Preparing this question outline takes considerable time, as it has to be painstakingly detailed, lucid to all concerned, and framed to point toward the desired decision. This requires skill with language, construction of definitions of terms, and descriptive skills for processes, physical characteristics, what tests are, and what they show. The lawyer also has to prepare the expert for deposition, a part of the pretrial discovery process where the other side learns what your testimony will be and what it is based on in science (analyses, testing, literature, experience, schooling, etc.).

The preparation for a trial may be quite extensive. I remember a case of trade secret theft I helped investigate in 1987, where it was simple weeks of research through many cubic feet of papers on the topic, a week or two of construction of testimony outlines, two or three days of deposition before trial, and three and one-half days of testimony in the trial. We were successful as the owner of the trade secret ended up owning the two companies involved in the theft.

The deposition, part of the discovery process where the other side asks questions of the witness in front of a court reporter (but no judge), usually takes place in a simple conference room. The parties present are the witness with his lawyer(s), the court reporter, and the attorney(s) in opposition. In cases where there are multiple defendants or plaintiffs, each