

WHAT IS THE DANGER?

Metal halide lighting is used in a wide range of industrial and commercial applications, although it can also be found in specialty applications, such as household aquarium lighting. In place of a filament, metal halide bulbs use a sealed quartz "arc tube" containing gases and metal salts, and electrodes at each end. Desirable attributes of metal halide light bulbs include their high efficiency, long life, and the ability of the bulb manufacturers to carefully control the "color" or "whiteness" of the light emitted by varying the mixture or "dose" of metals in the arc tube..

However, the arc tubes operate at high pressures and temperatures, and metal halide light bulbs will sometimes rupture violently, ejecting intensely hot quartz arc tube fragments, which can land on and potentially ignite nearby combustibles.

A TYPICAL SCENARIO

It can start out mysteriously: A fire in a sprinklered storage occupancy. The fire damage is well controlled by the sprinklers, but smoke and water damage to the stock is extensive. The area of origin is well defined but, upon initial review, there are no obvious ignition sources. However, one of the bulbs in an industrial light fixture suspended above the general area of origin is broken.

Forklift damage? No, the fire occurred overnight, on a weekend, or after the warehouse had been unattended for hours.

Stock too close to the fixture? Not according to your insured, and there appear to be reasonable clearances elsewhere in the facility. Besides, if that was the problem, why would a fire occur after the stock had been in the same position for days or weeks?

This is a typical, but not exclusive, example of a scenario in which a fire is caused by an exploding metal halide bulb. Such explosions can, depending upon the circumstances, result in the relatively confined fire damage described above, or, they can ignite a fire which takes down an entire building.

COZEN O'CONNOR'S CHINESE-MADE DRYWALL TASK FORCE

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Pop Goes The Light Bulb

FIELD ADJUSTER'S HANDBOOK

Metal Halide Lighting Fires



Prepared by the
Metal Halide Lighting Task Force
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FIELD ADJUSTER'S CHECKLIST:

This Handbook will focus on the steps that need to be taken in the immediate aftermath of a fire when an exploded metal halide bulb is a potential or possible cause of the fire, to maximize recovery prospects. Cozen O'Connor's Metal Halide Lighting Task Force stands ready to assist in accomplishing these critical tasks, or in providing any other help that may be desired:

1. **Cordon Off the Area of Origin** – Often, preserving and documenting the position and condition of debris on the floor directly beneath and for some distance around the suspect bulb and fixture can be nearly as important as preserving the bulb and fixture itself. To locate and determine the approximate position of arc tube fragments, or the remains of the plastic lens that is often used to attempt to contain metal halide explosions, may require painstakingly layering or sifting the debris, or some combination of these processes. While some disturbance of the scene due to fire suppression, overhaul, and public sector investigation may be unavoidable, movement of material in this critical area should be minimized, until responsible parties can be identified and put on notice.
2. **Identification of Potentially Responsible Parties** – Matching up the fixture at issue to one of its “twins” in the facility in order to identify the fixture's manufacturer and model number is generally a relatively simple process, at least where a lift is available to allow the investigator to obtain nameplate information. Determining the manufacturer of the bulb can pose greater challenges. What remains of the bulb in the fixture following an arc tube explosion typically provides few obvious indications to the untrained eye as to the bulb's manufacturer. From the standpoint of evidence preservation, it is preferable not to attempt to remove the bulb remains from the fixture in the field in order to attempt to garner information on the bulb's manufacturer. Fortunately, the roster of possible metal halide bulb manufacturers is short, and experts with significant experience investigating metal halide fire claims may well be able to identify “signature” features unique to a particular manufacturer from the

remains of a bulb that is still in the fixture, sometimes even by examining photographs.

Of course, if examination of bulbs in other fixtures in the facility reliably establish that 100% are from one manufacturer, that may support the conclusion that the subject bulb is from the same manufacturer. Exclusive reliance upon statements by the insured's personnel that they have only ever used one manufacturer's bulb is not advisable. Due to poor recollection or limited knowledge, it is not unusual for such assertions to later be refuted by evidence that fixtures in the facility are equipped with a variety of manufacturers' bulbs.

3. **Hire The Right Experts** – Metal halide bulb and fixture manufacturers generally hire experts who have investigated and participated in litigation involving many metal halide fires. The manufacturer will have an automatic advantage if your case depends exclusively upon experts who, although otherwise seasoned, have never handled a metal halide fire case, or maybe only one or two.
4. **Secure the Evidence** – Ideally, if the potentially responsible parties are put on notice and respond promptly, a consensus can be reached regarding what artifacts to secure, which will preclude any future spoliation arguments. If it is not possible to get all potentially responsible parties on scene before the evidence must be secured and the site released for restoration, it is prudent to err on the side of over-inclusiveness when collecting evidence. This would include:
 - The complete fixture, including the ballast, and bulb remains (ideally, still in the fixture);
 - Representative, exemplar bulbs and fixtures. If the subject fixture was equipped with a plastic lens or enclosure which apparently failed to contain the arc tube rupture, it is advisable to collect a quantity of exemplar lenses, to facilitate future testing;
 - Debris from beneath the fixture. If the debris has already been processed during the on-site

examination, and the debris is not voluminous, consider retaining it so that parties who are not able to visit the scene have the option of re-sifting it if they choose to do so. Plotting the locations from which critical artifacts, such as arc tube fragments, were recovered, using grid coordinates, is also often desirable.

5. **Survey the Lighting in the Facility**
 - Document the manufacturer and date codes for bulbs in other metal halide fixtures in the facility.
 - Any bulbs burned out? Any other bulbs ruptured? This may not have been really apparent to the insured if the fixture is enclosed, or if the ruptured arc tube did not break the bulb's outer glass “envelope”.
 - If the fixtures are equipped with lenses, are the lenses on other fixtures present, intact, and properly mounted? Is there any evidence of significant deformation or discoloration, suggesting abnormally high heat during operation?
6. **Obtain Information From the Insured**
 - When were the fixtures purchased and installed? Keep in mind that statutes of repose may come into play;
 - Has the bulb at issue ever been replaced since the original installation of the fixture or the insured's initial occupancy of the facility, and what are the insured's practices regarding bulb replacement, generally?;
 - What are the insured's practices regarding turning the lights on and off? Even in facilities where the lights are turned off on a nightly or other periodic basis, it is not uncommon for at least one lighting circuit to be kept on 24/7 for security purposes and, due to their more extensive usage, these “security” lights are more likely candidates for violent failures;
 - Has the insured experienced previous ruptures or otherwise had any awareness of the issue?;
 - Were there any electrical irregularities preceding the fire?