

BATTERIES

RISK MITIGATION

As lithium-ion batteries are widely used and have known potential risks, product makers need to take steps to manage hazards, reduce the possibility of consumer injury or property damage, and protect their reputations, attorneys Kenn Brotman and Scott G. Kobil say. The authors offer advice on steps to manage risks and reduce exposure.

Lithium-Ion Battery Failures: Suggestions For Product Manufacturers to Mitigate Liability Risk



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Highly publicized incidents involving lithium-ion battery fires have necessitated large-scale and costly recalls, or highly publicized investigations, requiring product manufacturers to incur not only the

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expense of recalls or investigations (not to mention lawsuits) but also the bad publicity and loss of consumer trust. As news reports expose various, albeit limited, incidents of property damage or personal injuries associated with lithium-ion batteries, numerous attorneys across the internet advertise their experience with lithium-ion related lawsuits. Frequently, the target of these lawsuits is not the manufacturer of the battery itself but rather the manufacturer of the larger product that uses the battery. With the proliferation of lithium-ion batteries, it may be just a matter of time before a fire on an airplane, a cruise ship, or a high-rise building leads to significant property damage or, far worse, exposes a large number of people to possible death or injury. Although sellers of lithium-ion powered products that experience failures cannot avoid lawsuits altogether, there are steps that can be taken to manage the risk or reduce exposure.

What Is A Lithium-Ion Battery And Why Can It Fail?

A lithium-ion "cell" comprises (1) a positively charged electrode, typically lithium oxide; (2) a negatively charged electrode, typically porous carbon or graphite; and (3) an electrolyte conductor, typically a lithium salt in an organic solvent. When the cell charges, the positively-charged electrode gives up some of its lithium ions, which move through the electrolyte to the negatively-charged electrode. When the cell discharges, the ions move in the opposite direction, pro-

ducing energy that powers the cell. A lithium-ion “battery” (or “battery pack”) is a collection of cells, along with housing and electrical connections.

Lithium-ion batteries have a high-energy density, owing in part to lithium being the lightest metal and least dense solid element. This high-energy density enables lithium-ion batteries to store greater energy over longer periods of time compared to traditional batteries. On the other hand, lithium’s chief disadvantage is that it is a highly combustible material. For example, in a lithium-ion battery, an individual cell can get so hot that it actually catches fire. The fire increases the heat, which causes the fire to spread to the next cell and get even hotter — a chain reaction referred to as “thermal runaway.” Ultimately, the entire battery can quickly catch fire or explode. In response to consumers’ increasing demand for batteries that last longer, manufacturers have packed battery cells closer together, which increases the battery charge but also increases the chance of thermal runaway.

In order to limit the risk of thermal runaway, lithium-ion batteries are designed so that they cannot be charged too fast (doing so increases the risk of starting the thermal runaway process) and placing dividers between cells to limit the spread of heat from a malfunctioning cell. Other safety features include temperature sensors, chips, circuits, and vents that monitor heat and regulate electrical power to help ensure the batteries do not overheat.

In addition to safety features within lithium-ion batteries, research is currently being performed on the viability of new battery sources that may be cheaper, more effective, and safer than lithium-ion batteries. For example, there is promise that lithium-sulfur may be the next “big thing” in battery development. Such technologies are still years away, however. For this reason, until other effective power sources are available (i.e., sources having a high-energy density that can still be used safely), certain practices should be considered when incorporating lithium-ion batteries into products.

Proactively Mitigate Against Battery Failure in Your Products

The first line of defense against lithium-ion failures is to know your battery supplier. Since the mass production of lithium-ion batteries started in the 1990s, it has become a high-volume, low-margin industry. Economic factors have caused some battery manufacturers to cut corners with some of the available safety measures. Therefore, it is important for product manufacturers to investigate their battery suppliers thoroughly. Manufacturers should become familiar with the battery manufacturing process and work with the supplier to ensure that the lithium-ion batteries are properly manufactured to minimize the risk of thermal runaway.

When selecting a battery supplier, a manufacturer should ensure that the battery manufacturer will accept financial responsibility for costs and potential liability

claims or business losses caused by problems with the lithium-ion batteries. Product manufacturers and retailers should include indemnification provisions within their vendor agreements or as part of their purchase orders. The scope of an indemnification provision should be negotiated with the vendor. Obviously, business factors will dictate the extent to which a vendor will agree to a broad indemnification provision. For example, whether a battery manufacturer will agree to indemnify the product manufacturer for all losses (including personal injuries, investigations, recalls, business losses, and reputational injuries related to battery fires) will likely be related to the size and length of the underlying business transaction. Regardless, a product manufacturer should confirm that the battery producer is willing to stand behind its product through the provision of an indemnification agreement.

Once the terms and scope of the indemnification provision are agreed upon, the product manufacturer should require that the battery manufacturer provide proof of adequate insurance to cover potential losses, and that the product manufacturer and/or retailer is a properly named additional insured. While a Certificate of Insurance is frequently viewed as sufficient for this purpose, reviewing the policy language itself, particularly with regard to coverage of additional insureds, is strongly encouraged because Certificates of Insurance can contain errors and may or may not modify or vary the terms of the actual policy. Consideration should also be given to the identity and reputation of the insurer providing coverage. In the event that an insurer refuses coverage if a loss occurs, initiating a coverage action against a foreign insurer may be challenging. For this reason, a manufacturer should consider using a vendor agreement that mandates that (1) the vendor maintain sufficient insurance coverage from an insurer carrying at least a certain A.M. Best rating (e.g., “A”) and (2) the insurer must agree to name the product manufacturer as an additional insured.

After requiring and reviewing applicable insurance coverage, the product manufacturer should remain diligent throughout the relationship with the battery vendor. Insurance policies typically cover either “occurrences” that arise at least in part during the policy period, or “claims made” within the policy period or a contractually bargained-for extended reporting period. The manufacturer should require that proof of coverage for each successive policy period be provided by the vendor, and records of such proof should be maintained by the product manufacturer. Each time proof of coverage is provided, it should be reviewed to ensure that it names the manufacturer as an additional insured and covers the agreed-upon scope of the indemnification provision.

However, simply relying upon a vendor or its insurer can leave a product manufacturer exposed if the vendor and/or its insurer refuses to defend and indemnify the manufacturer, or if the alleged loss exceeds the vendor’s coverage. For this reason, it is important for the manufacturer to maintain its own insurance and to con-

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firm that its insurance properly covers defects caused by a component part that was incorporated into the final product. Excess layers of insurance should also be obtained by the manufacturer whenever possible to cover large losses.

Of course, even with proper indemnification agreements and insurance in place, product manufacturers should provide instructions and warnings to end-users as necessary. To do this, manufacturers must understand the practical and environmental limits of their batteries. For example, because temperature impacts the efficiency and safety of lithium-ion batteries, manufacturers should notify consumers about recommended temperatures for safe operation and storage of their products. They should also advise that dropping or damaging the product could harm the battery, necessitating inspection or replacement by an authorized product representative or dealer. Working with the battery vendor to thoroughly understand the limitations or hazards associated with the battery will help the product manufacturer create appropriate warnings and instructions.

Both the product manufacturer and the battery manufacturer should carefully maintain records related to all testing performed on the batteries throughout both the design and manufacturing phases. To the extent possible, the product manufacturer should seek to coordinate with the battery manufacturer, or create a system of its own, to track which batteries are going into which products. With properly maintained records, it can be determined whether defects are limited to a particular production run or time frame or whether there are broader problems with the design or the manufacturing process.

With a little planning and attention to potential issues with lithium-ion batteries, product manufacturers can reduce the likelihood of battery-related fires, and mitigate risk should such an unfortunate incident occur.

Respond Appropriately When Adverse Incidents Occur

Even with careful planning, preparation, and research, problems can still occur. How a company reacts to adverse incidents can be as important as what it does to prevent them. A product manufacturer should react quickly when it learns of a potential problem with its products.

Upon receiving a report of an adverse product incident, the manufacturer should initiate an investigation. Contacting the consumer or investigating agency will help to uncover some of the basic facts. For example, contacting a local fire department or fire investigator can help confirm or refute whether the manufacturer's product was involved in the incident or whether the investigator has identified the ignition source of the fire. Speaking to the consumer also demonstrates the manufacturer's interest in the situation. While apologies or promises to ameliorate any problems should not be offered unless and until the investigation reveals a need to do so, expressing concern for the situation not only protects the company's reputation but also assures the consumer that the company cares and is taking the matter seriously. This can translate into greater cooperation and less animosity between the customer and the manufacturer, thereby reducing the possibility that a lawsuit will be filed.

Efforts should also be made by the manufacturer to secure the return of the product allegedly involved in the fire so that it can be carefully examined by product engineers or those intimately familiar with the product. It is critically important that the allegedly defective product be preserved and a chain of custody maintained so that it can be used as evidence in any future litigation. If destructive testing or analysis is required, it is essential that counsel for the manufacturer be notified and involved in the process. Counsel will assure that the consumer's counsel and any appropriate government agency are informed of the testing. It may also be appropriate to involve the battery manufacturer and/or its counsel. Failure to notify the appropriate parties of destructive testing can result in the test results being inadmissible in a future trial, or even worse, sanctions imposed against the manufacturer for destruction of evidence. Regardless of whether opposing counsel, their experts, or government officials elect to observe the testing, it should be thoroughly documented (by photography and/or video) at each step of the process. If the consumer refuses to return the product to the manufacturer, the manufacturer should insist that the consumer retain the product and notify the manufacturer of any intended testing or analysis. Once notified, the manufacturer should have a product engineer or retained expert attend and observe the inspection and testing of the product.

Post-incident inspection and analysis can reveal whether (1) the battery was a cause of the alleged incident or fire; (2) the battery was damaged, altered or replaced prior to the incident; or (3) the product was modified by the consumer after it was sold. If a design or manufacturing defect is found, the extent of the problem should be investigated to determine whether it is product-wide or only related to a specific group-manufacturing run of the product. This will also help the company and legal counsel determine whether the Consumer Product Safety Commission should be notified of the problem, and whether a recall is necessary.

Frequently, an investigation or inspection of one isolated incident does not reveal enough information to determine whether the issue is endemic. For this reason, it is important to track all incidents so trends can be identified and analyzed. However, this should be done only in consultation with product liability counsel in order to ensure that the scope of the information contained in the records is proper or perhaps even protected by the attorney-client privilege where appropriate, as most plaintiff attorneys will seek disclosure of other incidents related to the same or similar products.

Finally, upon learning of a product-related incident that caused personal injury or property damage, the manufacturer should notify its insurer, the component manufacturer, and the component manufacturer's insurer if the manufacturer has rights under the component manufacturer's policy(ies). Insurance policies have notification time limitations. The failure to timely notify the insurers could result in coverage being limited in scope or denied altogether. Early retention by experienced insurance coverage counsel may help ameliorate these risks. If for any reason an insurer declines coverage or refuses to defend the manufacturer in a lawsuit, insurance coverage counsel should be consulted to determine whether the carrier's position is legally supported under both the policy language and the applicable jurisdiction's law.

Because of the known potential risks and widespread use of lithium-ion batteries, a product manufacturer should incorporate the above recommendations in or-

der to manage the risk, reduce the possibility of consumer injury or property damage, and protect its reputation.