



Apple's Commitment To Safe Working Conditions In Our Supply Chain

We believe that every person who makes Apple products has the right to a safe and healthy workspace. Recently we've received some questions about whether workers in our supply chain are being harmed by unsafe exposure to the chemicals benzene and n-hexane. We want to take this opportunity to address those concerns by explaining how we investigated them, what we found, and what improvements we've made.

Strict standards, rigorous training.

To do business with Apple, our suppliers must follow some of the toughest standards in the electronics industry. When it comes to handling chemicals and toxic substances, the standards that we set for our suppliers across the world — regardless of their location — meet or exceed respected U.S. safety standards such as those set by the National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH).

Apple's restrictions are set out in our Regulated Substances Specification. Our RSS sets an occupational exposure limit of 0.5 parts per million for benzene, as recommended by ACGIH, and 28 parts per million for n-hexane, in line with NIOSH. To ensure that suppliers follow our strict requirements, last year we conducted nearly 200 factory inspections focused on hazardous chemicals — in addition to the 451 general supplier audits we completed.

We also provide extensive training. Through our 18-month Apple Supplier EHS Academy, we instruct the environmental health and safety managers in our supplier facilities in best practices that include hazardous chemical management, industrial hygiene and personal protective equipment. This program is raising the bar for EHS across our supply chain, and we've been encouraged by how our suppliers have embraced the opportunity.

Digging deep.

Still, we know we can do better. No one is tougher on Apple than we are on ourselves, and we're constantly pushing ourselves to improve. So we decided to do a focused evaluation of benzene and n-hexane.

Benzene and n-hexane are ingredients in many substances, such as paint strippers, industrial cleaning products, and household cleaners. As common as these chemicals are, we decided not to exclude any use in our search; we set out to catalog every use we could find, no matter how small, in our final assembly facilities.

We focused our investigation on our 22 final assembly facilities, which share many common manufacturing processes and collectively employ nearly 500,000 people.

Over the course of four months, our specially trained teams made visits to these 22 sites. Our experts:

- reviewed the Material Safety Data Sheets (MSDSs) provided by the manufacturer of every chemical used in the final assembly process and, if the MSDS was incomplete, sent the chemical for third-party testing
- screened chemical mixtures for benzene or n-hexane
- re-evaluated personal protective equipment uses
- inspected engineering systems that ensure adequate ventilation and air flow
- re-reviewed industrial hygiene monitoring reports and the worker medical records that we require suppliers to keep in order to discover any health changes

Our findings

Our four-month investigation of our 22 final assembly facilities found no widespread use of benzene or n-hexane, and no evidence of worker health and safety being put at risk from exposure to the chemicals. In the few cases where we found our suppliers using cleaners or substances that did contain benzene or n-hexane, it was in low concentrations and each use complied with our Regulated Substances Specification. More specifically:

In 18 of the 22 facilities, we found no evidence of benzene or n-hexane at all.

In three facilities, in supporting functions outside of the final assembly process, we found some substances that contained benzene or n-hexane within our RSS limits. To maintain manufacturing equipment, one facility was using two cleaning products that didn't list benzene or n-hexane in the MSDS provided by the manufacturer, but when we tested them we discovered small amounts. We worked with the supplier to find replacements. Another facility was using a small amount of n-hexane in a chemistry laboratory, under a fume hood and with all the proper safety precautions in place. The third facility was using a cleaner that contained n-hexane, and they have switched to an alternative.

In the last facility, an accessory supplier, four substances that were being used in the final assembly process tested positive for benzene or n-hexane. The chemicals were not listed in the MSDSs, and each use was within the limits of our RSS. Nevertheless, we have worked with the supplier to find alternatives for each.

Next steps

While we didn't find any evidence of workers being put at risk, we did learn some things from our investigation. First, we concluded that safer alternatives to these chemicals exist. So we have updated our RSS to explicitly prohibit the use of benzene or n-hexane in cleaning agents and degreasers in the final assembly process. We have also tightened our benzene restriction even further, to 0.1 ppm from 0.5 ppm.

We also know that it's important to double-check the list of ingredients provided by the manufacturers for chemicals used in our supply chain. In order to address any hidden risks from incomplete MSDS, our updated RSS requires facilities with final assembly processes to test, at a certified lab, all cleaning agents and degreasers before they're used in production. The updated RSS takes effect Sept. 1.

We're going to keep extending our work deeper into our supply chain, pushing ourselves to minimize harmful toxins, and work with stakeholders to ensure the health and safety of everyone who make Apple products.