

Position Paper 2025/167

Occupational Safety and Health in Battery Recycling

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Every person has the right to work in a healthy and safe environment. For trade unions, workers' well-being has always been one of the top priorities. Trade unions work for ambitious legislation in the field of occupational safety and health and its enforcement, they empower their members to take action at the workplace and support them in engaging with employers. The responsibility for occupational safety and health lies with the employer.

Workers' and their representatives' active involvement and participation in the assessment, prevention and mitigation of hazards and of risks is absolutely essential. Their first-hand experience and expertise on the shop floor – operating machinery, handling materials and substances, etc. – is indispensable when companies design their work organisation and health and safety procedures. Workplaces must be adapted to the workers. Trade union representatives and representative organisations must have the right to conduct workplace visits and inspections to identify hazards and ensure compliance with safety standards. They must have the power and the tools to stop their work in case of serious or imminent risk and to move away from the danger zone.

Recycling processes and working conditions

As long as no manufacturing processes have been established that allow for safer recycling of batteries, the process involves a number of steps, each with its own risks to safety and health. In a nutshell, batteries undergo:

1. **Crushing/Shredding:** Batteries are crushed or shredded into smaller pieces. This is done to break them down and separate different materials.
2. **Separation:** Mechanical processes separate metals, plastics, and other materials.
3. **Material Recovery:** Each material is processed and refined. Metals are extracted through smelting or chemical processes, plastics are cleaned and repurposed, and toxic or hazardous materials are disposed of.

The following risks occur and require measures to ensure workers' safety and health:

Chemical risks in battery recycling

Battery recycling involves handling various substances found in the batteries themselves and those introduced during the recycling process. These include materials like lithium, cobalt, nickel, manganese, and graphite, often in solid or powdered form. Other chemicals, such as lithium hexafluorophosphate, are present in electrolytes, while acids like sulfuric acid and hydrochloric acid are used in liquid form. There's also the potential release of hazardous gases like hydrogen fluoride during certain treatments, and fine particles or aerosols can be produced during grinding or chemical processes. Temperatures during these operations range from room temperature in some steps to over 500°C in thermal recycling processes.

Exposure to these substances can pose serious health hazards and risks. Short-term effects include breathing difficulties, chemical burns, and acute poisoning. Over time, exposure can lead to chronic illnesses, such as nerve damage, cancer, or lung diseases, and some chemicals may accumulate in the body, potentially causing genetic damage that could affect future generations.

The employer has the obligation to eliminate or minimise these risks. Trade union health and safety representatives play a vital role. Together with the employer, they identify the best ways to manage these risks: They ensure proper ventilation systems are in place to remove harmful fumes and that workers are equipped with protective gear like gloves and respirators. Regular training on safe handling practices and emergency responses is another area where they make a difference. Air quality monitoring ensures that safety standards are met. Union membership gives workers a collective voice to demand better protective equipment and safer working conditions.

Electrical Risks in Dismantling

Dismantling batteries can expose workers to electrical hazards, including shocks from exposed contacts, short circuits from tools or jewelry, and arc flashes that can cause severe burns or eye injuries. Health and safety representatives work with the employer to ensure that batteries and equipment have clear warnings about residual voltage and that mandatory grounding procedures are followed. They advocate for the use of insulated tools and help establish clear communication protocols to prevent accidents. Regular checks of tools and equipment are also crucial to avoid malfunctions. Being part of a union helps workers to push for these safety measures to be consistently applied and improved.

Explosions and Fire Risks

The process of dismantling batteries also carries the risk of fire or explosions, especially if cells overheat, are punctured, or come into contact with reactive substances. Health and safety representatives advocate for measures like fireproof barriers, temperature sensors, and gas detectors to prevent incidents. They also emphasise the importance of training workers in fire safety and ensuring proper storage of batteries in cool, dry, and ventilated spaces. Joining a union ensures workers have a say in implementing these life-saving precautions.

Risks Linked to Tools and Machinery

The tools and machinery used in battery recycling can also pose risks, including loud noise, vibrations, toxic dust, and sharp or moving parts. The employer must reduce these risks by ensuring that tools are fitted with vibration-dampening features and workers have access to hearing protection and dust masks. Proper maintenance of machinery is another priority to prevent accidents. Unions provide a platform to address these issues collectively, ensuring continuous improvement in workplace safety.

Comprehensive Risk Mitigation

A comprehensive approach to risk mitigation includes providing washing stations for cleaning hands, faces, and eyes, and equipping facilities with effective vacuum systems and air filters. Health and safety representatives also champion regular training programmes that cover safe handling of materials, emergency procedures, and the latest recycling technologies.

Monitoring worker health is another critical step. Representatives ensure that workers have access to regular medical care and check-ups so that the effects of exposure to hazardous substances can be tracked. If someone is exposed to dangerous levels, they must be reassigned to a safer role with no loss in pay or status, and receive proper medical care. Post-employment health checks are essential to monitor long-term effects. Unions play a key role in securing these measures and ensuring that they are upheld.

Autonomous Robots

The use of autonomous robots for repetitive or dangerous tasks can reduce human exposure to hazards. Such robots can handle high-risk procedures safely, minimising the need for protective measures. Health and safety representatives support the integration of these technologies and ensure workers are trained to manage and oversee robotic systems. Unions advocate for balancing technology with human labour, ensuring that robots enhance safety without threatening jobs.

IndustriAll European Trade Union's demands

1. Strict compliance with occupational health and safety legislation, rules and standards.
2. Provide workers with comprehensive information and targeted training.
3. Implement all possible technical or organisational measures to remove or minimise the hazards and risks, observing the STOP principle.¹
4. Provide PPE to everyone: respirators, gloves and protective clothing. PPE however should not be a “definitive solution”. Technical and organisational protective measures take priority over PPE.
5. Involve trade unions in the decision-making process regarding hazard and risk identification as well as the elaboration of safety measures, and provide avenues for workers to voice their concerns

¹ The “STOP” principle, which describes the order of priority of protective measures: 1) substitution, 2) technical measures, 3) organisational measures, 4) personal protection.

- without fear of retaliation or negative consequences. Allow their participation in the investigation of accidents.
6. Monitor air quality, establish ventilation, implement a break schedule, create infrastructure for adequate relaxation (break rooms, common spaces) and introduce hygiene standards (for example, clean changing rooms).
 7. Continuously improve safety practices: regular evaluation and updating of safety protocols, new technologies to reduce worker exposure to hazards, sharing of best practices within the industry to drive collective improvement.
 8. Take responsibility for the entire supply chain from raw material extraction via transportation to recycling and/or disposal. Work with suppliers to ensure ethical and sustainable practices throughout the supply chain, including fair labour practices and environmental protections.

Companies should incorporate worker health and safety into their broader Corporate Social Responsibility (CSR) initiatives and engage in collective negotiation with trade unions on occupational health and safety agreement. This includes setting ambitious goals for reducing workplace accidents and injuries, supporting workers' access to healthcare and education, and contributing to the development of sustainable and inclusive communities.

Nothing about us without us

All workers must receive comprehensive information about the hazards and risks at their workplace. They must be trained in how to safely use equipment and what personal protective equipment (PPE) is required. They need to know about their health and safety rights and responsibilities. Training and information must be available in an easily accessible language – to be understood by non-native speakers, and workers with dyslexia or different learning abilities. It must be clear whom to turn to if workers observe breaches or new risks.

Representatives of the management and unionised workers must regularly inspect the workplace together, to ensure that all risk mitigation measures are in place and to update them if necessary. Accidents and near misses are to be investigated with the participation of workers (representatives). Trade unions must also call for regular external inspections by government labour inspectors. Instruments and procedures for workers to report safety concerns and incidents must be in place, and they should be clear, simple and easy to follow, irrespective of a worker's level of education and ability to read or write.

By joining a union, workers gain access to resources and representation that prioritise their safety and well-being. Union-backed health and safety representatives are essential for creating safer, healthier workplaces, driving change, and ensuring every worker's voice is heard.