

# GoodElectronics' Input for the Special Rapporteur: Gender and Toxic

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## 1. INTRODUCTION

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Women in electronics factories are exposed to health risks from handling hazardous chemicals used in producing devices like smartphones and tablets. A single electronic product may include up to [1,000 chemicals](#), many identified as carcinogens, mutagens, or reproductive toxins, with a significant portion unassessed for health impacts. [Reports](#) of leukaemia and lymphoma among semiconductor workers, especially young women, in South Korea have raised concerns. Despite their crucial role, with women comprising 60 to 90 percent of the workforce in key Asian countries, OSH measures and practices often fall short. The industry struggles to ensure safe conditions, particularly against long-term hazards like hormonal disruption, spontaneous abortion, and increased cancer risk due to chemical exposure during manufacturing.

Since its inception in 2006, the [GoodElectronics Network](#) has spearheaded efforts to push state actors and corporations in the electronics industry towards respecting workers' human rights to safe and healthy working environments throughout the entire lifecycle of these products, from mining and manufacturing to electronic waste disposal.<sup>1</sup> Central to this mission is the prevention of exposure to hazardous substances, a critical measure in safeguarding the health and well-being of workers and upholding their rights. GoodElectronics, along with its partners, has highlighted occupational health and safety issues in major electronics-producing countries, affecting an industry workforce of over [17 million](#), with many female workers being exposed to dangerous chemicals. Aligning with the Special Rapporteur's report goals, our input will emphasize the insufficient safeguards against harmful exposures faced by female workers.

## 2. OUTSOURCING ACCOUNTABILITY

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A 2017 Bloomberg article, titled [American Chipmakers Had a Toxic Problem. Then They Outsourced It](#), reveals that 25 years after U.S. tech firms vowed to cease using harmful chemicals linked to subfertility and miscarriages, they outsourced production to Asia without ensuring compliance. This migration is driven by entrenched gender stereotypes that depict women as inherently more apt for monotonous, 'unskilled' tasks on production lines. These

gender-based practices lead to unique patterns of occupational health and safety (OHS) risks, as indicated by a 2020 [AMRC study](#) examining case studies from electronics factories in Indonesia and Malaysia. It underscores the health risks faced by female workers, especially those of childbearing age, due to potential prolonged exposure to hazardous chemicals. Outdated equipment and subpar or even negligent managerial practices may exacerbate these risks.

Transnational subcontracting has facilitated companies in circumventing legal liability for workers' conditions. This evasion partly stems from the inefficacy of judicial frameworks in host nations with limited regulatory capacity and from the constraints of international law. These factors greatly hinder the quest for justice and the acquisition of effective remedies for those impacted, as exemplified by the lengthy struggle faced by [RCA workers](#) in Taiwan, who faced not only multiple ownership transitions but also encountered complex legal frameworks and financial manoeuvres designed to evade liability.

A prime instance of outsourcing accountability is the use of dangerous chemicals like toluene, methanol, lead, xylene, trichloroethylene, n-hexane and benzene. In 2023, in Vietnam, 37 workers were hospitalized, one women fatally, from methanol poisoning at a [Samsung supplier](#). An earlier [report](#) from 2017 highlighted methanol poisoning incidents among workers at a cell phone parts supplier for Samsung and LG Electronics in South Korea. Benzene solvent is predominantly employed for the cleaning and degreasing of electronic components. However, its use poses significant health risks to female workers. Despite stringent restrictions in Europe and the United States, evidence indicates that benzene is still commonly found in the electronics manufacturing industries of nations such as China. Our 2016 report, [The Poisonous Pearl](#), explores the grave issue of occupational chemical poisoning in the electronics sector located in the Pearl River Delta. Based on interviews with 75 former workers, predominantly women, this report reveals a troubling lack of safety measures, insufficient dissemination of information, and a general disregard for worker health and safety by employers.

Benzene is only one of many hazardous chemicals used. An academic [study](#) on female electronics workers from 2013 revealed a serious incident at China's Wintek factory, where 137 employees were exposed to n-hexane, a toxic chemical, during iPhone touch-screen production for Apple. During a 2018 [risk assessment](#), LIPS, an Indonesian labour NGO, found that young female workers were exposed to toluene among other toxins. Without proper protective gear, this exposure risks causing birth defects, miscarriages, and damage to the nervous system, eyes, skin, and organs. One woman, who had been washing the transparent film of speaker units with toluene every working day for seven years, [stated](#):

We inhale the toluene and feel dizzy. We use masks, but the masks are the normal thin masks, even though they are supposed to get us the proper [gas] masks. Some workers vomit. Sometimes, when it is hot, we do not use a mask. There is no air conditioning, only a fan. Many workers suffer from respiratory illnesses and allergies. They have lung

diseases and difficulty breathing. This is caused by the fumes of the toluene. The fumes are everywhere because of the open work area.

### 3. EXPLOITATION BY DECEPTION

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The workers' [right to know](#) about the hazards and risks associated with their work, along with the measures they can take to protect themselves, is a fundamental principle in OHS. In practice, however, a significant information asymmetry exists, with workers often remaining uninformed about the toxic substances they encounter. This lack of information leads to preventable illnesses and deaths. The 2018 GoodElectronics report [Exploitation by Deception](#), underscores the issue of neglect in care, emphasizing how workers are unwittingly exposed to hazardous chemicals. The authors, including the former Special Rapporteur on toxics and human rights, argue that the lack of information about hazardous substances in the workplace could be considered exploitation through deception and should be punishable by law. A significant part of these challenges stem from industry's strong protection of proprietary information under the guise of trade secrets. A 2018 [study](#) of semiconductor factories revealed the use of over 420 chemical products, 40% of which are classified as trade secrets. This not only limits transparency but also significantly hinders research into the health effects of chemical usage. [Lim Ja-woon](#), a lawyer who has represented 15 sick Samsung employees, stressed the seriousness of this problem:

Our fight often goes against trade secrets. Any content that might not work in Samsung's favour were deleted as trade secrets.

The South Korean advocacy group [SHARPS](#), a member of GoodElectronics, has been at the forefront of exposing the dire health consequences of toxic chemicals in semiconductor and electronics manufacturing, with a particular focus on the industry giant, Samsung. In a 2016 report, SHARPS illuminated the staggering human cost of these practices, documenting 223 Samsung Electronics workers afflicted by serious blood disorders, such as leukaemia, brain tumours, and multiple sclerosis—tragically, 76 individuals have passed away. After a long for accountability in occupational health issues, SHARPS secured two legal victories against Samsung Electronics when the government agency responsible for the administration of workers' compensation and welfare services recognized a worker's chronic myelogenous leukaemia as linked to conditions at Samsung's LCD lab. Simultaneously, a higher court validated claims for posthumous workers' compensation for a victim of ovarian cancer from working at Samsung, marking an important acknowledgment of work-related illnesses within the company. In [March 2024](#), South Korea officially acknowledged, for the first time, congenital diseases in the children of Samsung Electronics' semiconductor factory workers—who were exposed to hazardous conditions during pregnancy—as industrial accidents.

These victories hold significance, yet their influence is geographically constrained, given the industry's expansion to other nations. GoodElectronics and allies have reported many

instances where women workers receive inadequate knowledge about the risks related to the exposure of chemicals, receive no or inadequate training, protective gear usage, and safety procedures. For example, a 2020 [report](#) by Swedwatch concerning occupational poisoning within the Philippines' ICT industry includes a statement from a worker, indicating:

We were given a safety orientation. But no one told us about the risks. We were told how to perform the task, but the chemicals and their effect on the body, that was not included in the orientation.

#### 4. PRECARIOUS WORKING CONDITIONS

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Another barrier to claiming justice is the widespread use of temporary and non-standard forms of employment, including reliance on agencies, short-term contracts, and student interns. It is essential to emphasize the considerable pressure exerted on contract manufacturers by branded buyers (lead firms) to lower factory expenses. Buyers like Apple expect contract manufacturers, as one expert notes in [Dragging out the best deal](#), 'to pirouette production like a ballerina at any time on a 24/7 regime irrespective of human constraints'. This downward price pressure not only leads to unsafe work practices but also drives efforts to minimize labour costs. This has spurred a move towards labour flexibility, chiefly via contractualization, significantly reducing labour costs and disproportionately impacting women who are overrepresented on the assembly line. Due to their unstable job status, temporary workers face higher rates of layoffs, underpayment, and limited access to social and health services, as well as greater health risks.

[The Poisonous Pearl](#) report compiles a series of testimonies from women who have suffered chemical exposure, revealing a concerning pattern: employers frequently decline to renew the contracts of workers who become sick. The issue is worsened by the long latency periods of occupational diseases, often spanning years. Workers may only realize they are affected after changing jobs, making it challenging to attribute their illnesses to previous chemical exposures. Moreover, the widespread use of short-term contracts leads to high labour turnover, thereby diminishing the effectiveness of meaningful worker participation in worker safety training programs and OHS committees and programs. This [ILO report](#) suggests that the accident rate among temporary and agency workers is up to 2.5 times higher than that of regular workers. Job instability may discourage workers from coming forward and addressing OHS concerns with management. For example, a report by [Swedwatch](#) on the employment of hazardous chemicals in the ICT manufacturing sector in the Philippines includes a statement from a worker, highlighting the dismissive attitude towards safety concerns:

If we want to know whether the chemicals are dangerous the manager asks us if we want the job or not. They say that we applied for the job and should not be complaining.

No worker should ever be subjected to the injustice of having to decide between preserving their health and sustaining their livelihood.

## 5. WORKER EMPOWERMENT

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Trade unions play a crucial role in safeguarding workers' health: they negotiate safety standards through collective bargaining, participate in health and safety committees, facilitate worker trainings, raise awareness, and campaign for stronger OHS laws. The rights to freedom of association and collective bargaining are critical to safeguarding workers' interests and rights, and they are inseparable from the right to safe and healthy work.

Regrettably, achieving full recognition of trade union rights within the electronics industry continues to pose a huge challenge. This situation is marked by the failure of states to protect these rights, coupled with a widespread hostility towards unions among corporations, including lead firms like [Samsung](#), [Apple](#), and [Foxconn](#). This representation gap implies that only a limited number of workers benefit from the safeguards provided by collective bargaining agreements and can access the formal channels facilitated by unions to address their grievances. Absent collective representation, advocating for change, and monitoring compliance with OHS laws becomes an immensely daunting task for individual workers. These challenges manifest itself at a global, national and workplace level.

At the global level, social dialogue between unions and major ICT companies is limited. IndustriALL's Assistant Secretary General, Kan Matsuzaki, noted in 2019 that just 10% of [Responsible Business Association](#) (RBA) members have ties with union.<sup>2</sup> Only a handful, like Nokia, Dell, and HP, have actively engaged with unions. The [ITUC Global Rights Index](#) identifies various obstacles workers face in exercising their freedom of association at the national level, notably in countries like China, the U.S., the Philippines, Vietnam, Mexico, Malaysia, and South Korea, though not exclusively in these nations. Among these challenges, contractualization significantly hampers efforts towards [unionization](#). Few countries outside Europe have succeeded in achieving a significant union presence throughout the sector.

Women workers encounter extra obstacles in asserting their right to unionize. Challenging the workplace management hierarchy fundamentally questions gender disparities and power dynamics in the workplace, where managerial roles are predominantly held by men. In Vietnam, a 2019 [risk assessment](#) observed that gender-specific concerns are often unaddressed due to male-dominated union leadership, further compounded by legal restrictions on freedom of association that result in workplace unions being dominated by employers. The underrepresentation of women in the leadership of trade unions means that OHS issues specifically affecting female workers are overlooked or deprioritized within management-worker dialogue and collective bargaining.

This issue extends beyond Vietnam, as the electronics industry globally shows a minimal presence of women-led trade unions, which reduces the visibility of women as agents of

change. While the root causes are complex and a detailed discussion exceeds the scope of this input, they undoubtedly include patriarchal norms and practices, which go hand in hand with employers' hostile strategies to curb workers' collective power in the workplace. This situation hinders women workers' participation in labour movements and limits the ability to hold management to account for unsafe working conditions.

## 6. RECOMMENDATIONS

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The electronics industry has avoided responsibility for its impact by outsourcing production, harming the health of millions of female workers. Research on health impacts of toxic exposure has mostly targeted major firms in a few countries, overlooking the higher risks to women in smaller businesses or developing areas. This gap means these health issues are underexplored and underreported. Such widespread disregard for worker health underscores an urgent need for comprehensive strategies to mitigate these dangers and ensure accountability. In this context, the [15 principles](#) proposed by the erstwhile Special Rapporteur on Toxic and Human Rights offer a thorough blueprint for minimizing the dangers posed by toxic substances in the workplace, while also guaranteeing that victims receive rightful justice and compensation. Additionally, the insights provided in the [Exploitation by Deception](#) lay solid groundwork for future interventions. Below, we offer a concise overview:

- **States** must enforce laws against human rights abuses from toxic exposures in product lifecycles, imposing civil and criminal penalties on businesses that expose workers to dangers without consent. This includes making employers prove safety, allowing charges for overseas violations, and strictly upholding workers' rights to information on workplace hazards.
- **Businesses** in the electronics sector must respect human rights by preventing rights violations and addressing any impacts from their activities. This involves assessing and communicating risks, particularly regarding hazardous substances, and making safety information available to workers. They must maintain transparency and uphold high safety standards throughout their supply chain, also informing workers about their rights and remedies. They should work with unions to address OSH concerns.

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<sup>1</sup> Here we focus on semiconductor manufacturing and the final assembly of products due to limited space.

<sup>2</sup> Matsuzaki, K. (2018) Powerpoint presentation, document on file.