



# **STORIES OF WOMEN WORKERS IN VIETNAM'S ELECTRONICS INDUSTRY**

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## Abbreviations

ASEAN	Association of Southeast Asian Nations
AFTA	ASEAN Free Trade Area
MPI	Ministry of Planning and Investment
CGFED	Research Centre for Gender, Family and Environment in Development
VEI	Vietnamese electronics industry
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
ILO	International Labour Organization
MOLISA	Ministry of Labour, Invalids and Social Affairs
NICs	Newly Industrialized Countries
GSO	Vietnam General Statistics Office
VCCI	Vietnam Chamber of Commerce and Industry
WTO	World Trade Organization

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This is an initial study on all aspects of life of women workers in the electronics industry. Through this study we wish to learn about the size, workforce and working conditions of the electronics industry as well as raise public awareness on the environmental risks and impacts on workers' health. We do hope that this report will contribute effectively to ensuring a safe working environment for women, and facilitating their enjoyment of their basic labor rights. Due to limited time and resources, the analysis results of the report may have some shortcomings. We wish to receive comments and suggestions from our readers<sup>1</sup>.

On behalf of the research team

Pham Thi Minh Hang  
CGFED Vice-Director

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<sup>1</sup>This study is a product of IPEN and CGFED with contributions from many organizations and individuals. Views, opinions, conclusions and recommendations presented in the report are not necessarily those of CGFED or studied organizations and individuals in the study. Please send your comments to Pham Thi Minh Hang, CGFED (hangpham@cgfed.org.vn) and/or Pham Huong Thao, (phamhuongthao@gmail.com).

## Executive Summary

In recent years, the electronics industry has made important contributions to the development of the Vietnamese economy, becoming a leading industry with great potential to become both a regional and global exporter. According to the Vietnam General Statistics Office, in 2013, for the first time, electronics exports surpassed the garment sector – a key industry of Vietnam. The electronics industry currently maintains its number one position in exports. In 2015, the Vietnamese electronics industry was recorded to have a total revenue of \$46 billion USD, including phones, computers, and other devices. In 2016, the industry's exports increased to \$53 billion USD. The total number of employees in the industry increased from 46,000 in 2005 to about 411,000 in 9 years, of which approximately 80% are women working in assembly lines. Although the industry has grown rapidly and is considered to be a “*symbol for the integration*” of the Vietnamese economy, information on the working conditions in the industry is limited, particularly impacts on the environment and health of workers.

Samsung started its operation in Vietnam in 1996. After 20 years, the company has become Vietnam's largest foreign investor with a total registered capital of \$14.8 billion USD. In 2016, the turnover of Samsung Vietnam was \$46.3 billion USD, with \$40 billion USD in export value, an increase of 9.9% over 2015 (accounting for 22.7% of the country's total export value) and employing nearly 137,000 workers. Of the Samsung factories in Vietnam, Samsung Bac Ninh and Samsung Thai Nguyen are key, not only in Vietnam but also in the company's global system. For example, Samsung currently manufactures 50% of its mobile phones in Vietnam and only 8% of them in South Korea. The revenue of Samsung's factories in Vietnam in 2016 was \$36 billion USD, and their products were exported to 78 countries and territories, concentrating mostly in Europe and the US. Samsung Electronics is appreciated by some as “*a successful demonstration of the electronics industry and FDI*” in Vietnam.

While many reports and studies have focused on the economic impact of the electronics industry, the stories of its women workers have largely been neglected. This study offers a unique contribution to the existing literature on working conditions in the Vietnamese electronics industry. The study combines industrial sector research and qualitative narratives of 45 women working at two large Samsung factories in Bac Ninh and Thai Nguyen. It is the first study of its kind in Vietnam to shed light on the experiences of the predominantly female electronics industry workers. Because Samsung is notoriously secretive, it offers a rare glimpse into life on the Samsung factory floor. Phase one of the study used document-based research methods to create a landscape and history of the Vietnamese electronics industry and related existing labor relations policies and recommendations from both the government and the International Labour Organization (ILO). The second phase utilized qualitative methodologies to present narratives of 45 women currently working in the industry to advance understanding of their working conditions and lives.

The results emerging from the study speak to the need for implementing policies and actions that prevent harm to workers in the electronics industry and the surrounding environment. Increased knowledge of the sector and its impacts in Vietnam is needed, particularly gender disaggregated data concerning impacts on women. Finally, the study underscores the importance of raising public awareness about chemical and occupational health and safety in the electronics industry.

## Main Findings

Key findings in this report include:

- The electronics industry is the highest grossing industry in Vietnam with \$53 billion USD revenue in 2016 – and \$36 billion from Samsung alone. Samsung currently makes 50% of their mobile phones in Vietnam.
- Vietnam has placed emphasis on developing standards for electronics products to ensure quality. However, there are no specific regulations on workplace safety in the electronics industry to safeguard the health of its workers.
- The workforce of the electronics industry in Vietnam is mostly composed of women. Approximately 80% of the workers are women, working at the lowest-paid rung of the management hierarchy—assembly line workers.
- Nearly one-third of electronics companies examined by the government violate Vietnamese law governing overtime work. A government investigation of 17 electronics companies found two with more than 100 hours/month overtime in peak months and three others with 50 – 60 hours/month overtime. Vietnamese law limits overtime to 30 hours/month. A government study noted that, “*too much overtime is one of the main reasons leading to labour accidents in electronic companies* (MOLISA, 2016).”
- None of the 45 female workers at Samsung interviewed for this study received a copy of their work contracts. This is a violation of Vietnamese law. All the women said that their work contracts are kept by the company and that they were not given a copy.
- The health impact of the electronics industry in Vietnam is unstudied and unknown. However, the government has noted the potential for serious health impacts of the electronics industry: “*Problems relating to labour safety in the electronics industry can lead to cancer and heart attacks due to being exposed to chemicals, radiation and electronic waves ... But this is only an inference, without proving statistics, although there are real lead poisoning and occupational diseases*” (MOLISA, 2016).
- More than half of the women workers in this study are married and had children before coming to work at the company. However, all of the women with children are separated from their kids, who live with their grandparents in another town or city.
- Female workers reported exhausting working conditions include alternating day and night shifts for periods of 4 days; standing for the entire 9 – 12-hour shift; and high noise levels regularly exceeding Vietnamese legal limits (MOH, 2016) (MONRE, 2010). Pregnant workers stand for the entire shift but are permitted to take breaks. However, most of them try to not take breaks because if Samsung thinks they are taking too much time off, the company deducts money from their wages. Time is controlled to such an extent that workers have to request “toilet cards” to be able to go to the bathroom in order to maximize time on the production line.
- The women workers in this study reported a variety of health impacts. All 45 women reported fainting or feeling dizzy at work – though it was described as a “*normal*” consequence of shift work. Miscarriage was reported to be “*very normal if they are young.*” Other reported

problems included eyesight damage, nosebleeds, “big legs,” changes in beauty, and aches in the stomach, bones and joints.

- The women interviewed for this study stated that they did not work directly with chemicals. However, none of them thought of cleaning products as containing chemicals or about exposure from chemical use elsewhere in the factory. Jobs within mobile phone factories include positions that utilize paints, inks, and cleaning products containing chemicals. Process steps include heating, gassing with metallic coatings, painting, laser carving, and cutting – all of which have the potential for chemical releases.
- Formation of trade unions and freedom of association is a requirement of ILO Conventions 87 and 98, but Vietnam has not ratified them. The Vietnam National Union of Workers in Industry and Trade (VUIT) is affiliated with IndustriALL and covers workers in the electronics industry. However, Samsung has a no-union policy and claims that it “*has a principle of management that does not need trade unions.*” An internal Samsung document described company actions to undermine formation of trade unions.

### **Conclusion and Recommendations**

In 2017, Samsung Vietnam is expected to achieve a turnover of \$60 billion USD with an export turnover of more than \$50 billion USD. Currently, Samsung continues to expand its component parts manufacturing business in Vietnam, with the number of employees expected to increase to 150,000 by the end of 2017. Vietnam’s electronics industry has made significant contributions to the national economy and has generated many employment opportunities. However, the rapid growth of the industry has not been accompanied by parallel and proportional improvements in environmental, health and safety measures and the health of the workforce in this industry. This is a matter of great concern.

The Government of Vietnam has policies to attract investment capital and create favorable conditions for this sector. This overlooks the harms of the industry to the environment as well as the health of workers. Women workers in Vietnam have the right to a safe and healthy environment. The research team proposes 13 recommendations that emerge from issues documented in this report that are critical steps to address worker and environmental health. These recommendations include legal and regulatory measures, access to information, and independent research with gender disaggregated data to identify and characterize impacts on workers’ health.

# I. Introduction

## I.1. Overview: Electronics is a Key Industry in Vietnam

Vietnam has been one of the fastest growing economies in Asia. Most of that growth is attributed to the electronics industry, which makes up more than 20% of the GDP. However, despite the size of the industry and its economic importance, current information about the industry's potential harms to human health and environmental impact is lacking. This is especially important to women's health because approximately 80% of the work force is female. This is the first study of women's experiences and challenges as workers in Vietnam's electronics industry.

### Electronics as a development strategy

Vietnam has welcomed the electronics industry at the highest political level. Decision of the Prime Minister No. 55/2007/QĐ - TTg dated 23 April 2007 confirmed that the electronics industry continues to be one of the three key industries in the 2007-2020 time-period. Statistics from the Department of Foreign Investment, Ministry of Planning and Investment show that so far, Vietnam has attracted over \$10 billion USD in Foreign Direct Investment (FDI) from leading companies such as Samsung, Foxconn, LG, Panasonic, Intel, Nokia, and others (MPI, 2017). According to the Vietnam General Statistics Office, in 2013, for the first time, electronics exports surpassed the garment sector – a key industry in Vietnam (GSO, 2015). The electronics industry currently retains its number one position (GSO, 2015). In 2015, the Vietnamese electronics industry was recorded to have a total revenue of \$46 billion USD, including telephones, computers, and other devices. In 2016, the industry's exports increased to \$53 billion USD; as a result, it topped all other industries.

### Mostly female workforce

The total labour force of the industry increased from 46,000 in 2005 to around 411,000 in 9 years, of which approximately 80% are women working in assembly lines (ILO, 2016). Although the industry has grown rapidly and is considered to be “a symbol of integration” (ILO, 2016) of Vietnam's economy, information on the working conditions in the industry is very limited, particularly impacts on the environment and health of workers.

### Samsung leads the electronics industry in Vietnam

Samsung started its operation in Vietnam in 1996. After 20 years, the company has become Vietnam's largest foreign investor with a total registered capital of \$14.8 billion USD (2015) (Trang, 2016). In 2016, the turnover of Samsung Vietnam was \$46.3 billion USD, with \$40 billion USD in export value, an increase of 9.9% over 2015 (accounting for 22.7% of the country's total export value) and employing nearly 137,000 workers. Of the Samsung factories in Vietnam, Samsung Bac Ninh and Samsung Thai Nguyen are key, not only in Vietnam but also in the company's global system. For example, Samsung currently

Worker salaries contrast with corporate sales. Female worker A: “Every month I receive a basic salary of 6.5 million VND [~\$280 USD]. Room rental costs 700,000 VND. After paying foods and travels, I can save only 3 million VND a month [~\$130 USD] ... I try to go to work when I get sick, for example when I feel a little dizzy and nausea I still go to work although I am very tired. I may lose a lot of bonus if I stay off work for a day. The daily payment is not high, but if I stay off work for a day, I shall lose about 01 million VND.” Please Annex 1 for more interview transcripts from workers.



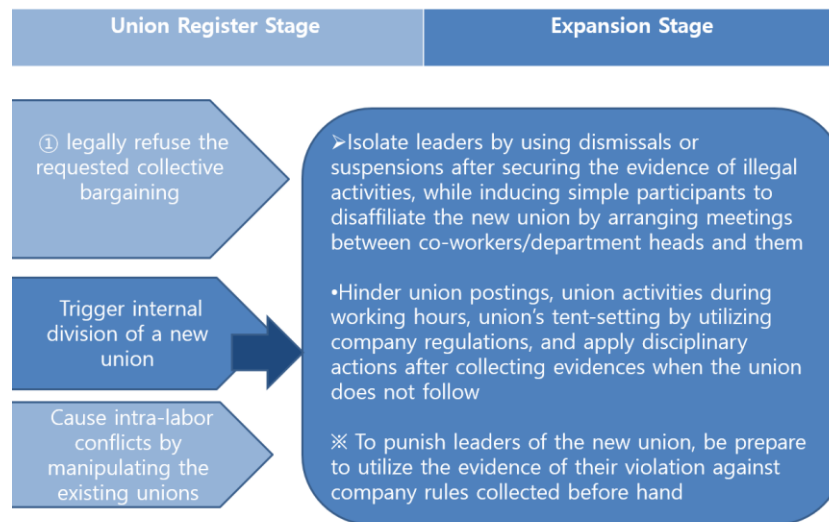
manufactures 50% of its mobile phones in Vietnam in contrast to 8% of mobile phone production in South Korea (Cho, 2015).

The revenue of Samsung's factories in Vietnam in 2016 was \$36 billion USD, and their products were exported to 78 countries and territories, concentrating mostly in Europe and the US. Samsung Electronics is appreciated by some as "*a successful demonstration of the electronics industry and FDI*" (Vuong, 2016) in Vietnam. Thus, a study of women workers in Samsung provides a good insight into the lives of women workers in the Vietnamese electronics industry in general.

Formation of trade unions and freedom of association is a requirement of ILO Conventions 87 (ILO, 2017) and 98 (ILO, 2017), but Vietnam has not ratified them. The Vietnam National Union of Workers in Industry and Trade (VUIT) (Ngo, IndustriAll Union, 2015) is affiliated with IndustriALL and covers workers in the electronics industry. However, Samsung has a no-union policy (ITUC, 2016) and claims that it "*has a principle of management that does not need trade unions.*" An internal document (ITUC, 2016) described company actions to undermine formation of trade unions, including how to identify workers likely to try to organize a union, how to monitor them, and how to isolate them to prevent formation of a trade union.

Excerpt from leaked Samsung PowerPoint presentation describing company efforts to undermine trade unions.

## 2. Countermeasures of unionized companies



From International Trade Union Confederation and IndustriALL (2016) Samsung – modern tech, medieval conditions [http://www.ituc-csi.org/IMG/pdf/samsung\\_web\\_en.pdf](http://www.ituc-csi.org/IMG/pdf/samsung_web_en.pdf)



The Samsung Electronics plant in Bac Ninh displays its massive export numbers on the outside of the building. Photo credit: <http://www.businesskorea.co.kr/english/news/industry/8785-samsung-made-vietnam-50-samsung-mobile-phones-made-vietnam>

## I.2. Research Objectives

This study had two key research objectives:

1. Describe the panorama of the Vietnamese electronics industry in terms of size, workforce and working conditions as well as raise public awareness of the risks and impacts of the working environment on workers' health; and
2. Get an inside look at the lives of women workers in Samsung Electronics factories through stories that explore working conditions and health status.

The lack of data on health impacts and working conditions of women in the electronics industry underscores the need for increased publicly available knowledge of the sector and its impacts in Vietnam. Research findings should be used to formulate policies and actions that prevent harm to workers in the electronics industry and the surrounding environment. A special focus should be on the industry's majority female workforce. Publicly available information should raise awareness about working conditions, chemical safety and other issues, particularly as they relate to women.

## I.3. Research Methodologies

The study applied the following methodologies:

- Literature and document analysis, assessment and synthesis. The analysis included documents relating to the electronics industry in Vietnam such as legal documents, policies, scientific research papers, and communication materials.
- Fieldwork, using in-depth interview protocols and life story methodologies. Interviewers conducted all conversations in person and created a conversational atmosphere to help facilitate women workers to talk about their experiences, their feelings and views in the most comfortable and natural way. Interviewers paid special attention to principles such

as respecting the interviewees, anonymity and information confidentiality. The questionnaire has terminologies relating to sexual harassment that are sensitive in Vietnam. Therefore, regarding such questions, the interviewer explained them clearly to the interviewee and started the interview only when the woman felt sufficiently comfortable. All interviews utilized informed consent and guaranteed confidentiality to protect worker identity.



Samsung's Bac Ninh plant is located in the north near Hanoi. Map credit: <http://www.dailymail.co.uk/news/article-3836128/Inside-Samsung-s-scandal-hit-Hanoi-factory-workers-earn-33-week-install-exploding-batteries-scrapped-Galaxy-Note-7-mobile-phone.html>

#### I.4. Study Sites

Field studies were conducted near two Samsung Electronics factories:

1. Yen Phong 1 Industrial Zone, Yen Trung Commute, Yen Phong District, Bac Ninh: Samsung Electronics Vietnam Co.,Ltd (SEV) located in Yen Phong I Industrial, Yen Phong District, Bac Ninh Province with total area of 100 hectares - is a member of Samsung Corporation. SEV specializes in manufacturing mobile handsets and other hi-tech electronics devices and has about 44,000 employees. Yen Phong 1 has drawn nearly \$8 billion USD of investment capital so far, including \$7.2 billion USD of foreign direct investment. Notably, Samsung earmarked an additional \$3 billion USD for investing in the park last year. With additional investment of \$3 billion USD, Samsung Display in Bac Ninh has a total investment of up to \$4 billion USD, and has become the second largest project of total investment by Samsung Corporation in Vietnam.
2. Yen Binh Industrial Zone, Pho Yen, Thai Nguyen province: The Samsung Electronics Vietnam Thai Nguyen (SEVT) complex sits on over 100 hectares in the Yen Binh industrial zone, and has investment capital of more than \$3 billion USD and an aviation inventory with a total investment capital of nearly \$15 million USD. This is the largest project of the

Samsung Group. At present, some 62,000 workers are employed here, and 75% of them are female (Thuat, 2017).

### **I.5. Target Groups**

Women workers at two production areas of Samsung Electronics: Yen Phong Industrial Zone, Bac Ninh and Pho Yen Industrial Zone, Thai Nguyen.

### **I.6. Implementation Process**

The study was conducted in two phases:

Phase 1: Data collection and tool development

- Data and documents have been collected through: a) direct contacts with key agencies: General Statistics Office, Ministry of Planning and Investment, and Ministry of Health; CSOs such as the Institute for Development and Community Health (LIGHT) and Centre for Development and Integration (CDI); and b) websites using search engine with key words “electronics industry” and “Vietnam electronics industry”.
- A semi-structured, in-depth interview was developed based on storytelling/description of life experiences, and was completed after getting comments from sociological experts and a pre-test of two in-depth interviews. The in-depth interviews focus on four key sections: Personal information of the interviewee (to learn about her personal circumstances: family, educational level, etc.); history of jobs done and reasons for selecting the current job; current working environment (working time, working space, health status, time for rest and recreation, relations with co-workers and managers); and future plans and expectations for improvement of working conditions (if any).

Phase 2: Fieldwork

Fieldwork consisted of two stages of face-to-face interviews:

Stage 1: November 2016 with 45 respondents (21 in Yen Phong -Bac Ninh, and 24 in Pho Yen-Thai Nguyen).

Stage 2: March 2017 Follow up interviews with 12 women workers in Yen Phong -Bac Ninh – Bac Ninh and 13 in Pho Yen-Thai Nguyen. The interviewees were those who were already interviewed in Stage 1 to get more in-depth information. The interviews were conducted in their hostels or at a café near their working place or lodging. Women workers chose the interview place in order to create the most comfortable space for the conversations.

Initially, women were somewhat hesitant to participate in the study. At the same time of the first round of interviews, mass media covered the death of a women working at a Samsung Electronics factory in Thai Nguyen. In response, the company instructed workers to avoid contact with the media.

## **A female worker dies at the Samsung Electronics factory in Thai Nguyen**

In September 2016, news emerged about the death of a female worker at the Samsung Thai Nguyen factory whose name is Luu Thi Thanh Tam (22 years old, from Yen Dinh, Thanh Hoa). According to her older brother, Mr. Luu Van Tien: *“In the morning and noon of August 31<sup>st</sup>, Tam called to ask about our parents’ health, the learning situation of our younger brother who is in the 2<sup>nd</sup> grade and said she would come home on September 2<sup>nd</sup>. Hearing the news that she died in the afternoon of that day, our whole family was shocked and my parents could not believe it.”* According to Tam’s family, her health was very good and she had no serious illness before working at the Samsung factory.

Around noon of September 7<sup>th</sup>, a representative of Samsung Vietnam said: *“Ms. Tam signed a two-year contract and has been our employee for 4 months, starting from May 2016. She works in the Clean Office of the factory and is in work training as a new employee. Her main task is to deliver the staff’s clothes and uniforms to the Clean Office. When they begin employment, all of our workers have a medical examination followed by an annual health check.”*

On October 14<sup>th</sup>, a police investigation in Pho Yen town (Thai Nguyen province) concluded that the cause of Ms. Tam’s death was myocarditis (inflammation of the heart muscle). The causes of myocarditis include viral infections, autoimmune diseases, environmental toxins, and adverse reactions to medications. The details of Ms. Tam’s situation are not clear, though overwork cannot be ruled out as a contributing factor. The investigation revealed that at 2 pm on August 31<sup>st</sup>, Ms. Tam had a headache while she was working in the Clean Room of Samsung Electronics Vietnam Co. Ltd. located in Thai Nguyen province (the SEVT Company). Ms. Tam was then taken to the SEVT medical center for examination and treatment. About 4 pm the same day, Ms. Tam showed signs of weakness in health and was taken to the Military Hospital 91 for emergency treatment, but unfortunately died at 17:30 the same day.

The investigative police unit of Pho Yen town asked the National Institute of Forensic Medicine for a diagnosis and toxicology analysis of organ samples from Ms. Tam and the case was referred to the Criminal Technical Division of the Police Department of Thai Nguyen province for further inspection. The National Institute of Forensic Medicine concluded that no toxic substances were found in the samples of organs of Ms. Tam, though it is not clear what substances were measured.

The Criminal Technical Division of the Thai Nguyen Police Department concluded that Ms. Tam died of myocarditis and did not proceed with a criminal case. Ms. Tam was buried by her family according to local customs.

## I.7. Study Limitations

With available resources, the data collection of this study used mainly online data collection tools and in-depth interviews were only conducted with a small sample of women workers at the two study sites. As a result, the study sample is not nationally representative. In addition, data on chemical use in the factories, including specific substances was not available. The results of this study reflect the views of a sampling of women workers in two key electronics industrial zones. Online data collection may neglect research studies and statistics on this industry that the online tools cannot access. However, the study data shows an obvious trend of the actual lives of women workers in the electronics industry as well as general information on the current electronics industry in Vietnam.



View of the Samsung plant in Bac Ninh province. Photo credit: <http://www.dailymail.co.uk/news/article-3836128/Inside-Samsung-s-scandal-hit-Hanoi-factory-workers-earn-33-week-install-exploding-batteries-scrapped-Galaxy-Note-7-mobile-phone.html>

## II. Overview of the Electronics Industry in Vietnam

### II.1. Establishment and Development

Even though the electronics industry has existed in Vietnam for more than 30 years, economic experts consider that it “*remains a toddler taking its first steps.*” Although always considered to be a key industry, most local companies are just assembly workshops of consumer goods where the benefit is the lowest among production stages. Please see Annex 2 for a timeline of establishing and developing the electronics industry in Vietnam.

While the electronics industry in Vietnam had an average annual growth rate of 20-30% in 2000-2010, in 2011, growth increased over 96%. Many major foreign information technology (IT) groups continued investing and expanding their operations in Vietnam such as Intel, Samsung Electronics, Canon and Nokia. In 2012 alone, the electronics industry earned an export value of

over \$22.9 billion USD, accounting for 18% of the country's total export value. For the first time, electronics products became the largest export earner in the country, surpassing crude oil. Exported electronic products include spare parts, hardware devices, computers, electronic and telecommunication products.

Since January 1, 2007, after Vietnam became a full member of the World Trade Organization (WTO), government support and preferential treatment given to the electronics industry were also removed as a condition of Vietnam's accession to the WTO. Some FDI companies went bankrupt, stopped production or moved to commerce and services. However, since Vietnam's accession to the WTO, a new foreign investment wave has flowed into Vietnam, including major electronics industry investments from big companies such as Samsung Electronics (South Korea), Intel (USA), Nidec (Japan), Foxconn (Taiwan), Meikom (Japan), and Nokia (Finland). The investment projects by these groups increased the FDI capital in the Vietnamese electronics industry to over \$10 billion USD.



Lunch break at Samsung's Ban Ninh plant. Almost all the female workers are in their twenties.

Photo credit: <http://www.phamhongphuoc.net/2013/07/10/nhung-co-gai-xuan-thi-samsung-bac-ninh/>

At present in Vietnam, there are approximately 1,021 electronics companies, with an average annual growth rate of 30-40%. According to the Vietnam General Statistics Office (GSO), in 2013 for the first-time, electronics exports surpassed garments – a key industry in Vietnam (GSO, 2014). Up to now the electronics industry has maintained its number one position in exports (GSO, 2014). In 2015, the Vietnamese electronics industry recorded a total revenue of \$46 billion USD, including telephones, computers, and other devices. In 2016, the industry's export value sharply increased to \$53 billion USD, holding the number one position among other related industries.

*“Vietnam is considered a prestigious destination and a ‘construction site’ and highly appreciated by many investors worldwide, for having great potential for development,”*

Director General of the Information Technology Department (Ministry of Information and Communications (Dantri, 2017).

Although being considered a key industry, recording some achievements in attracting Foreign Direct Investment (FDI), and playing a major role in export, in fact, the Vietnamese electronics industry remains in the initial stage. The turnover of the entire hardware and electronics industry accounts for 90% of the information technology industry, but most of it is held by FDI companies and local companies only concentrate on assembly and trade services.



The mostly female workforce stands for the entire work shift period. Photo credit:

<http://www.thanhniennews.com/business/vietnam-inherits-factories-from-manufacturers-fleeing-china-36771.html>

## II.2. Working Conditions in Vietnam's Electronics Industry

According to the Information Technology Department (Ministry of Information and Communication), at present, the electronics industry is one of the sectors generating the highest number of jobs in Vietnam. More than 1,000 companies employ 441,000 workers, a 7-fold increase since 2005. *“Although the electronics industry is a symbol of integration, local companies are almost out of the supply chain,”* said VCCI President Vu Tien Loc. *“Companies can only supply carton boxes, bags and packing service.”* Research by ILO points out that 99 of the 100 largest electronics companies in Vietnam at present are FDI investments. The majority of the 20 largest companies are from Japan, followed by South Korea. These 20 largest companies use half of the total labour force of the industry.

A 2016 study by the Ministry of Labour, Invalids and Social Affairs and ILO states, *“some 80% of the workers in the low segment of this industry are women working in assembly lines which make little value added to the products. Women mostly do not hold technical or management positions. And senior management positions in the industry are held by foreigners.”* (MOLISA, 2016)



The government study noted that excessive overtime is an important contributing factor to occupational accidents. *“Too much overtime is one of the main reasons leading to labour accidents in electronic companies.”* The report also identified lack of training on safety and occupational health, insufficient personal protective equipment and failure by employers to apply solutions to improve working conditions as additional causes of accidents.

A single Samsung Galaxy S8 mobile phone retails for \$670 - \$825 USD in the US. In contrast, the monthly salary of a female worker who assembles the phone is 6.5 million VND (~\$280 USD). Female workers at Samsung Vietnam typically have a quota of assembling 2000 mobile phones per day.

An initial study by inspectors of the Ministry of Labour, Invalids and Social Affairs at 17 electronic manufacturing and assembling companies across the country discovered many violations of labour safety codes. Working and resting time violations were the most common, primarily because of production orders from management or other corporate stakeholders. Two of the 17 electronics companies mobilized overtime of more than 100 hours/month in peak months. Two other companies used 60 hours/month overtime and another nearly 50 hours/month.

Vietnamese regulations do not permit more than 30 hours/month and 200 hours/year overtime. This indicates that according to the government study, nearly one-third of the electronics companies they examined are violating laws governing overtime work. Worthy of note is that in production workshops, working time is strictly regulated under different forms. For example, at a telephone assembly factory, time is controlled to such an extent that workers have to request “toilet cards” to be able to go to the bathroom in order to maximize time on the production line.

The government study reports use of alcohol detergent, corrosive detergent, and sulfuric acid. But only some companies have informed the government about cases of illnesses and injuries due to chemical exposure. The government has noted the potential for serious health impacts of the electronics industry, but admits it lacks data: *“Problems relating to labour safety in the electronics industry can lead to cancer and heart attacks due to being exposed to chemicals, radiation and electronic waves ... But this is only an inference, without proving statistics, although there are real lead poisoning and occupational diseases”* (MOLISA, 2016).

The research report, Initial assessment of working condition impacts on workers of electronics manufacturing and assembling factories in Vietnam, by the Centre for Development and

Integration (CDI) asserted:

Female worker C: *“We will be reprimanded by our manager if we fail to fulfil the output quota. In my workshop, quality is first. To boost output, we have to do a lot of other work, particularly when the company cuts down the workforce in my workshop. For example, previously 3 workers did a job, then 2 and now only 1 does that job.”*

*“The working conditions of the electronics manufacturing and assembling industry can be considered hard and harmful and in some production stages of battery and microchip especially hard and harmful.”*

The research noted negative impacts of the electronics industry on workers such as immediate fatigue and adverse effects on reproductive health. The report also described an incident in which

workers fainted en masse at Samsung Bac Ninh Company in May 2012. The incident worried many workers and competent authorities had to examine the occupational health and safety

practices of the company's factories. In June 2013, a production workshop witnessed 6 miscarriages including a 7-month-old stillbirth, and a case of birth defects resulted in induced abortion. During the study, many workers reportedly frequently suffered from osteoarthritis due to work posture, tinnitus, and declining vision (CDI, 2014).

In Vietnam, no in-depth research studies exist on the effects of the electronics assembly job on workers' health.

In the opinions of the general public, the electronics industry is considered to be an industry with less risks or a "clean industry" due to its clean, air-conditioned environment which is perceived to be an ideal and safe environment. There is little awareness about the risks of chemical exposures in electronics production. Few people know of the concept, "*clean here is in regard to products not workers*" – Le Truong Giang (Environment and Working Condition Research Centre).

The primary legal document shaping the government's policy approach to the sector fails to mention working conditions or methods to protect worker health and safety.

Decision No. 1290/QĐ-TTg of the Prime Minister on the Action Plan for Development of the Electronics Industry until 2020, with a Vision to 2030 calls for the following:

Female worker A: "*Some of us stand during work while others have to shuttle between two ends of the production line. It is not a concern for a young and single woman, but it is very difficult for a 3-month pregnant woman. As they have to stand or shuttle all day long, many have suffered a miscarriage.*"

*"Review, amend and complete standards and technical regulations for manufacturing support of industrial products in the electronics industry. On this basis, develop regulations on application of standards and technical regulations in manufacturing in order to improve the quality and ensure the prestige of industrial products in the electronics industry in Vietnam."*

Despite being a major policy document on this important industry, the document does not mention working conditions or insuring the health and safety of workers.

### **II.3. Hazardous Chemicals in Electronics Becomes a Global Issue**

In 2006, more than 100 governments reached agreement on the Strategic Approach to International Chemicals Management (SAICM) – a global policy agreement led by UN Environment to promote chemical safety. Three years later, governments agreed that hazardous chemicals in the lifecycle of electrical and electronic products was an emerging policy issue that deserved a special focus for action. In 2011, a UN-led expert group consisting of 32 governments (including Vietnam) and representatives of industry and public interest NGOs, developed a comprehensive set of recommendations including measures that should be adopted to address electronics production. Governments subsequently encouraged use of these recommendations at global SAICM meetings held in 2012 and 2015 (the most recent meeting held). These global decisions are highly relevant to electronics production in Vietnam. For more information on this topic, please see Annex 3.

### III. Experiences of Female Workers in Vietnam's Electronics Industry: Qualitative Research

#### III.1. General Information about Interviewees

The average age of the interviewees is 25 years. The youngest is 20 (born in 1997) and the oldest is 31 (born in 1986). The longest serving employee has 5-years of work experience and has become a group leader, and the youngest employee has worked for 1 year.

As the company comprises many factories, workshops, and production lines, most of the workers do not know the number of employees in the company or even in their own workshop. They may know that the number of workers in their line (the smallest working unit) usually consists of 10-14 workers.



Lunch time at Samsung Vietnam. Photo credit: <http://vneconomictimes.com.vn/article/corporate/samsung-struggles-to-house-workers>

All of the interviewees came from other localities than the factory town. In this sense, they are short-term migrants moving to the Samsung factory town for work. All of them graduated from senior high school. According to the women, Samsung Electronics will even recruit those who have graduated from junior high school when the company is in urgent need. However, regarding males, the company only recruits those who have graduated from senior high school or higher.

*“I found that the company had recruited female applicants who have graduated from junior high school. However, currently only those who have graduated from senior high school are recruited. If the company runs short of workers, then they recruit junior high school graduates. However, it never recruits male applicants who are junior high school graduates. Recruitment is very strict for men who have to go through many rounds of interviews. Male applicants failed most of the time.”* (In-depth interview (IDI). 05)

The interviewees all rent a room near their workplace. Some of them had lived in worker dormitories, but later moved out because the dorms were “*not comfortable because we are tightly controlled in terms of time.*” In some cases, workers wishing to live in the dormitories were not able to obtain space.

According to the interviewees, as Samsung Electronics’ recruitment process is very short and easy, the company attracts a large number of new senior high school female graduates who have no plan to study at university:

*“Samsung conducts a selection at the Industrial Park and at districts and communes. The job seekers who live in remote areas can send their job application files and be interviewed at their district (official residence). After they are recruited, the new employees then go to Hanoi for some weeks or a month’s training. The first signed contract is for 2 years. After 2 years, those who wish to continue working will register. If they meet the company criteria, they will be allowed to sign a 3-year contract, and if they want, they can sign an indefinite contract.” (IDI.11)*

All the interviewees mentioned the contract duration and the rule, “*not to disclose the company’s secrets.*” However, no one remembered the exact terms of the employment contract.

Surprisingly, all of them said that their work contracts are kept by the company and that they were not given a copy. This is a violation of Vietnamese law. Article 16, Section 1, Chapter III on Employment Contract in the Vietnam Labour Code says, “*An employment contract should be made in written form in 2 copies, the employee keeps 1 copy, and the employer keeps 1 copy*” (CP, 2015).

More than half of the interviewees are married and had children before coming to work at the company. However, all of the women with children are separated from their kids, who live with their grandparents in another town or city.

Workers said that during the recruitment process, there was no discrimination between applicants who are married with children and women who are unmarried without children.

The interviewees for this study all work in phone case and screen assembly, packaging and main line workshops.

Female worker B: “*The training time depends on the situation. If they are short of workers, we would be sent to the workshop after less than a week training. But if not, we have to go through 1-week training before officially taking the job.*”

Workers report unanimously that they stand for the entire working shift. Pregnant workers stand for the entire shift but are permitted to take breaks. However, most of them try to not take breaks because if Samsung thinks they are taking too much time off, the company deducts money from their wages

### **III.2. Time of Work**

Workers can choose to work in shifts or in a team, though both groups are doing shift work. All the workers we interviewed experienced both types schedules. Samsung decides which type of schedule workers will follow.

Shifts are three units of eight hours each. These occur when 24-hour coverage is needed to meet production deadlines. Typically, the pattern is 4 days' work then two days off. At Samsung, employees work two rounds of 4-day shifts and then two rounds of 4-night shifts, regardless of weekends. No extra payment is provided if the shift falls on the weekend, but 300% of salary is provided if they work on big holidays.

Those who work in a team usually work during the five weekdays. They receive two Saturdays off per month but work the other two. In case of an increase in production output, working on a

Female worker B only wishes to have a longer break time between work hours, *“We can go to the canteen to have a drink or just to rest. According to Samsung regulations, we can only sleep in sitting and never in lying position.”*

Saturday provides 200% of salary compared with weekdays and working on big holidays yields 300% of salary compared with weekdays. Working on these days is voluntary, but “encouraged” if the company needs to increase production output.

The time for breaks and lunch may be changed depending on the season and is decided by the manager, but the duration is the same.

### Sample Schedule for Rotating Day and Night Shifts

Sun, Mon, Tue, Wed	Thu - Fri	Sat, Sun, Mon, Tue	Wed-Thu	Fri, Sat, Sun, Mon
8 pm Start	Off	8 am Start	Off	8 pm Start
10 pm Break 10 min		10 am Break 10 min		10 pm Break 10 min
1130 pm – 1220 am Lunch		1130 am – 1220 pm Lunch		1130 pm – 1220 am Lunch
2 am Break 10 min		2 pm Break 10 min		2 am Break 10 min
5 am Stop for normal shift		5 pm Stop for normal shift		5 am Stop for normal shift
710 am Breakfast for extra shift		710 pm Dinner for extra shift		710 am Breakfast for extra shift
8 am Stop		8 pm Stop		8 am Stop

### Sample Schedule for Team Shifts

Sun	Mon - Fri	Sat	Sun	Mon-Fri	Sat
Off	8 am Start	8 am Start	Off	8 am Start	Off
	10 am Break 10 min	10 am Break 10 min		10 am Break 10 min	
	1130 am – 1220 pm Lunch	1130 am – 1220 pm Lunch		1130 am – 1220 pm Lunch	
	1 pm Break 10 min	1 pm Break 10 min		1 pm Break 10 min	
	635 pm Stop for normal shift	635 pm Stop for normal shift		635 pm Stop for normal shift	
	710 pm Dinner for extra shift	710 pm Dinner for extra shift		710 pm Dinner for extra shift	
	8 pm Stop	8 pm Stop		8 pm Stop	

### III.3. Types of Work

The women interviewed in this study primarily worked in two types of mobile phone jobs: 1) Production line where each woman is responsible for one part of the assembly process –



Mobile phone assembly at Samsung Vietnam.

Photo credit: <http://samsungrumors.net/one-tells-samsung-town-vietnam/>

basically connecting parts together; and 2) Checking the phone for any defects, e.g. phone case, glass exterior, etc.

Depending on the phone model, workers are assigned a certain number of phones to be finished per day. Usually, workers are assigned to complete 2000 phones per day on average. However, they often have to do more than the assigned quantity. For example, by 5 pm (afternoon break time), they might finish their assigned 2000 phones, but as accessories from other departments arrive they have to do about 300-400 more (usually to 6:30 pm). This comes out to

approximately 250 phones per hour or 4 per minute. In 2013, Samsung faced a \$108 million USD fine in Brazil (The Inquirer, 2013) for demanding that workers assemble a phone in 32 seconds (2 per minute). Workers in Vietnam do twice as much and the company pays no fines.

All workers on the assembly line work standing up for the entire shift.

Other types of jobs in the mobile phone factory include making plastic covers, window screen production, keypad processing, and box cover production (Ngo, Asia Monitor Resource Center, 2013). These jobs include printing, painting, use of printing ink solvents, heating steps, use of detergents, and gassing with metallic coatings. An earlier study by CDI noted comments from a worker about air quality in the coating mixing section.

*“Inside the workshop, the air is so polluted, and paint smell is so terrible, but the manager said that it is not harmful. The factory took its time resolving issues raised in a workers’ petition on pollution in the work environment (Ngo, H., 2013).”*

### **III.4. Awareness of the Working Environment**

The majority of the interviewees were pleased because, *“their jobs are secured.”* They get social insurance and salary is comparable with the average salary in the society. Interviewees also liked receiving periodic health checks from the company doctor and getting pregnancy and parental leave as regulated by the government. Interviewees said that their work is not heavy and the workshops are clean.

Some of the women are worried about the working environment but their comments are very general and vague.

*“I had heard that working at Samsung I would be exposed to toxic substances. So, before going to work at the factory I told my parents that if I found it was impossible to work I would return home. However, I thought that if I would be exposed to toxic substances, thousands of others would also be exposed or even die, so it might be no problem. As we work at the finished product workshop, we have to go through the magnetic door every day to prevent theft. My recent periodic health checks show good results. I don’t know whether I will get sick in the future but currently I am healthy. We are all worried about the magnetic door. Frankly, we don’t know what it is. However, it can check people going in and out, so rumors like this spread.” – IDI.06*

The workshops are very noisy. Some say that they got used to the noise after some time. However, some others always feel uncomfortable.

*“The workshops are always noisy. The noise always surpasses 82 decibels as it is caused by the operating machines and people talking and even scolding one another. I have to stand while working for the whole shift. I stand on two bricks to operate the machine. At the training course on workplace safety, I asked the trainer what should I do if I am going to faint? They told me to sit down if I do not feel well – but if I sit down while the machine is still operating, it will hit my head. Once I sat down after I felt very sick and stood up again after some minutes.” – IDI.40*

### **Community Perception of Harm**

Local residents living close to the Samsung industrial park viewed Samsung as a dangerous work place, *“It is very dangerous to work at Samsung.”* Community residents expressed concern over workers’ reproductive health, including infertility. When researchers probed, community members told us that in 2012, a newspaper reported that *“female workers working at Samsung IP*

would suffer from ovarian atrophy.” This information apparently resulted in many workers quitting their jobs (Cường, 2012).

After the publication of the article, the Samsung management board asked the Center for Occupational Health-Environment and Medical Examination (Bac Ninh Provincial Health Department) and the Institute of Occupational Health and Environment to check the levels of electromagnetic radiation and radioactivity of the door system. An official Document No. 02/CV-2012 issued on January 10, 2012 by the Center for Occupational Health-Environment and Medical Examination (Bac Ninh provincial Health Department) concluded:

*“The results show that the electromagnetic radiation and radioactivity measured at the main magnetic door and workshop doors are within permissible levels according to criteria TCVN 3718- 2005 and TCVN 6561- 1999, and do not affect the reproductive health of workers and other employees of Samsung Electronics Việt Nam.”*

Attached to the report is a document showing the results of the examination conducted by the Institute of Occupational Health and Environment (Ministry of Health), which states:

*“Compared to the criteria (TCVN 6561-1999), the electromagnetic radiation and radioactivity at all measured points are within permissible levels.”*

However, the specific radiation measurements were not reported. Please see the section below on radiation and chemical exposure for further discussion of this issue.

### III.5. Health of the Interviewees

Once a year, most workers have health checks. Workers exposed to toxic chemicals have special periodic health checks. The interviewees attributed their runny noses and other sicknesses to “changing weather.” Not many thought of the working environment. They clearly showed their “fatigue” and blamed the shift work, but no one considered it a health problem.

*“I think working in shifts makes me tired, our health cannot be adapted to a night shift immediately after changing from a day shift. For example, I have to sleep all day before a night shift and working at night I am more tired. I can sleep the following day but it cannot make up for the night before. I was always in that state of health in the first years and now it remains the same. My co-workers told me that I would gradually get used to it.” – IDI.23*



Mobile phone assembly at Samsung Electronics in Vietnam happens standing up. Photo credit: <http://www.koreaherald.com/view.php?ud=20141111000954>



All 45 workers interviewed for this study have fainted or felt dizzy during work, and they all blamed their lack of sleep on the time change from a day shift to a night shift. According to the women, as they have more free time, they go out too long or do not sleep enough, and they become tired and faint or feel dizzy during working hours. Sick workers are carried to the company's health station for care and treatment.

*“Once I got a high fever and I called the workshop foreman. He called the company manager and they sent an ambulance to take me to the health station. There they provided me with first aid and some medicine and then sent me to the hospital. I came home by myself when I felt better. Later, I had a stomach problem. I often have abdominal cramping after work or after changing from a day shift to a night shift. I think it is because the stomach cannot adapt to the change as I eat a lunch during a day shift but during a night shift I eat a supper at 12am and sleep all day and do not eat anything. If it is too painful, I ask for a rest. Normally the pain stops in 4-5 minutes then comes back half an hour later. Sometimes it is only a dull ache and I continue working.” – IDI.34*

Women workers also mentioned problems such as “myopia” (nearsightedness), “big legs”, changes in beauty, stomach trouble, bone problems and osteoarthritis.

*“I have suffered from myopia for more than a year now. I think it is because of the work which requires me to focus on a single distance. For example, I have to concentrate in checking the products running downwards. As I receive payment by output, I have no time to look up from my work at a different distance, so I think my eyesight is affected.” – IDI.39*

*“Among workers in my production line, I am the weakest and I have frequent nosebleeds. The bleeding is often prolonged. However, the doctor said that I only have chronic sinusitis. However, I don't know what happens to my blood vessels walls and why I often suffer from nosebleeds.” – IDI.03*

Pregnant workers enjoy “special treatment.” They eat in a separate canteen and do lighter jobs. They receive a leave at the 7th and 8th month of pregnancy with 50% salary. Pregnant women get a parental leave at the 9th month of pregnancy until their child is 6 months old with payment according to State regulations. However, pregnant workers usually stand for the entire shift. They are permitted to take breaks. However, most of them try to not take breaks because if Samsung thinks they are taking too much time off, the company deducts money from their wages. About miscarriage, one interviewee noted that *“It is very normal if they are young. If they are pregnant and to have keep it for the first trimester is it very difficult, they miscarry a lot.” – IDI.09*

### **III.6. Health and Safety Concerns**

During the interviews, workers raised concerns about working conditions and health impacts. These worker experiences can be considered as important contributions to information about working conditions in Vietnam under current regulatory policies, and provide indications about areas for research and regulatory strengthening.

## **Shift work**

The International Agency for Research on Cancer (IARC, 2007) has determined that shift work, including working during the night shift, is a probable human carcinogen. Shift work is associated with a higher risk of breast cancer, heart disease (IARC, 2010), and other cardiovascular disorders such as hypertension. Studies indicate that shift work is also associated with health problems such as sleep disorders, workplace injury, preterm delivery, gastrointestinal disorders, and mental health disorders including depression. Shift work can also disrupt the family and social life of workers.

## **Standing**

Prolonged standing can induce musculoskeletal disorders, chronic venous insufficiency, preterm birth and spontaneous abortion, and carotid atherosclerosis (Omar, 2011). Nearly all of the scientific literature suggests providing workers the ability to “*have movement*” during work, such as walking around, or being able to easily shift from standing to sitting or leaning posture during work.

## **Noise levels**

Women workers noted that noise levels in the factory routinely exceed 82 decibels. This can be damaging to health and exceeds regulatory levels in Vietnam and in other countries. There are two legal documents regulating noise levels in Vietnam: one limits the level to 70 decibels and the other to 85 decibels. (MONRE, 2010) (MOH, 2016) These are consistent with EU limits of 80 decibels in a working day (European Parliament and the Council, 2003). High noise levels routinely experienced by women in this study can result in psychological stress, tinnitus and permanent hearing loss that cannot be corrected by a hearing aid (OSHA, 2017).

## **Miscarriage**

The interviewees reported that miscarriage “*is very normal.*” This raises serious concerns about women’s health. Several workers noted that they personally knew of miscarriage cases. One worker said,

*“Some of us stand during work while others have to shuttle between two ends of the production line. It is not a concern for a young and single woman, but it is very difficult for a 3-month pregnant woman. As they have to stand or shuttle all day long, many have suffered a miscarriage.”*

Another worker stated,

*“It is very normal if they are young. If they are pregnant and to have keep it for the first trimester is it very difficult, they miscarry a lot.”*

In South Korea, an analysis of epidemiological data found evidence suggesting reproductive risks to women from semiconductor fabrication jobs including spontaneous abortion, congenital malformation, and reduced fertility (Kim MH et al, 2014). A subsequent examination of reproductive risks among female microelectronics workers aged 20 – 39 years old found a significantly higher risk for spontaneous abortion and menstrual aberration (Kim I et al, 2015). Without more information on potential workplace chemical exposures and working conditions, it is difficult to assess the cause of significant miscarriage rates reported by the women in this study. The women in this study claimed that they did not work with chemicals, however, workers

frequently do not consider cleaning products as chemical products or consider use of chemicals within the same factory environment. The reasons for the apparent significant miscarriage rates are not clear, but the seriousness of the effect warrants investigation.

### **Radiation and chemical exposure**

The radiation standard currently used in Vietnam was developed in 1998 and is also used in other countries. Vietnam standard TCVN 3718-1: 2005 on Management of Radio Frequency Radiation Fields limits maximum exposure levels in the frequency range of 3kHz - 300GHz as that is the range where the body absorbs radio frequency energy most efficiently. The energy density (S) limit specified for a Base Transceiver Station is 2W/m<sup>2</sup>. This standard is consistent with guidelines from 1998, but orders of magnitude higher than proposed precautionary limits based on an updated review of the science (BioInitiative, 2012).

The media report about ovarian atrophy described above led to contradictory information provided by the workers about the effects of the working environment on their health. Women interviewees noted that in contrast to themselves, *“men often work in high-tech workshops or workshops exposed to chemicals.”* Some of them held that the working environment is totally safe because they did not think they were exposed to “chemicals.” However, none of them thought of cleaning products as containing chemicals or about exposure from chemical use elsewhere in the factory. Other workers said they had heard about negative effects on health, particularly that they would suffer from cancer and infertility. However, all of them claimed that *“they would be badly affected if they work there for a long period of time. It is no problem for a short-term worker.”*

Jobs within mobile phone factories include positions that utilize paints, inks, and cleaning products containing chemicals. Process steps include heating, gassing with metallic coatings, painting, laser carving, and cutting – all of which have the potential for chemical releases. In some factories, solvents used in cleaning such as n-hexane have poisoned workers (China Labor Watch, 2012).

Mobile phones themselves contain a variety of chemical substances. According to the US chemical industry, *“an average smartphone may contain up to 62 different types of metals.”* (ACS, 2015). A 2012 study of mobile phones found mercury, lead, bromine due to toxic flame retardants, and chlorine due to the use of PVC plastic (The Ecology Center, 2011).

### **III.7. Life Outside of Working Hours**

When night shift workers finish work, they will have breakfast at the company or along the road. After reaching home, they do their personal hygiene then watch TV. They go to sleep at about 9-10 am, get up at 5-6 pm, do personal hygiene, have supper, and go to work at 7 pm. They often skip lunch. The activities of day shift workers are similar, only changed from night into day. On weekends and holidays, workers often gather with their friends to eat and talk.

Married workers often go to see their families during holidays and the two days off between the day shift and the night shift. Cooking is permissible in rented rooms, but forbidden in company dormitories. Samsung Electronics Vietnam has built many worker dormitories. Male and female workers live in separate dormitories under strict control. An access card is used for going in and out of dormitories. Outsiders cannot enter, and relatives are only allowed to visit in the hall. Dormitories are only for unmarried workers and each room accommodates 6-8 people. This has the potential to disrupt sleep patterns if some them are working on different shift schedules.



Worker dormitories at Samsung's Bac Ninh plant are crowded and have the potential to disrupt sleep patterns if some of them are working on different shift schedules. Photo credit: <http://genk.vn/tin-ict/dot-nhap-nha-may-samsung-o-bac-ninh-20130711172709955.chn>

### III.8. Workplace Hierarchy, Scolding, and Pressure

There are 8 levels of employment at Samsung Vietnam. The 6 highest levels are usually managed by men, the 7th level might be managed by men or women, and the 8<sup>th</sup> and lowest level consists almost entirely of female workers. About 80% of the workers are woman.

When working hours are extended under production deadlines, things become very tense and the workers are often scolded.

*“We are scolded and blamed for failing to increase production output. If we do not produce enough products they will scold and shout at us. I don't know what to do as I have tried my best. In general, everyone feels unhappy and sad when we can't increase production output because we have to work an extra shift and are being reminded any time we come to work.” – IDI.10*

### III.9. Future Plans

Asked about what they wish most to change at their workplace, a majority of the interviewees said they wish to have work hours reduced and not to change work shifts.

*“If it is possible, I wish to work at a stable time. I think my health would be better.” – IDI.03*

Most of them, particularly the younger ones, held that they work in the electronics factory to save a certain sum of money and later will take another job.

*“I want to learn more to further develop myself. Working outside the factory I can acquire new knowledge which I can't get here. The work and knowledge I learn can benefit me in the future.” – IDI.10*



The number of sandals indicates how many women live in a single room. Photo credit: CGFED

*“Working here is not my purpose. I feel fed up. I work here to make money for immediate living needs. In the future, I want to go back to live with my parents or get married to a husband living close to my parents. My parents do not want me to work here either. Now I want to go back to school and find a job close to my parents’ house or open my own shop.” – IDI.35*

## Conclusions and Recommendations

Vietnam has given a green light to the electronics industry at the highest levels. Decision No. 1290/QĐ-TTg issued by the Prime Minister to approve the Action Plan on the Development of the Electronics Industry until 2020, with a vision to 2030 says: *“The electronics industry is the basic material production sector in the national economy, having a key position in the modern economy and strongly impacts other industrial sectors. The development of the electronics industry*

*speeds up the industrialization process, helps develop other industrial and servicing sectors and creates more employment opportunities.”*

For the electronics industry, Vietnam has an advantage of a young population with nearly 60% of working age (17-60 years of age). The country enjoys an advantageous geographic location and is situated in a region with a rapid and dynamically developing industry. In addition, Vietnam is also a potential consumer market with a population of over 90 million. So, Vietnam has many opportunities to attract investment capital, technology transfer, and management and human resource training knowledge from developed electronics industries in the region. These are some of the reasons why the Vietnamese government has developed many policies to encourage foreign investment in the country and cooperate with Vietnamese businesses in this sector.

Vietnam's electronics industry has contributed a lot to the national economy and has generated many employment opportunities. However, the rapid growth of the industry has not been accompanied by parallel and proportional improvements in environmental, health and safety measures. The legal documents currently in force have no specific regulations on workplace safety in the electronics industry. In addition, there has been no in-depth research on the potential harmful effects of the electronics industry on the health of Vietnamese workers despite the fact that the industry has a long track record of harm to human health and the environment. This has specific implications for women's health since approximately 80% of the factory workers are female, while most of managers are men.

In our study, many women complained about a variety of physical symptoms consistent with their working environment but often blamed "changing weather" as the cause of them. In contrast, community residents expressed clear concerns about potential harmful impacts from the factory.

...the rapid growth of the industry has not been accompanied by parallel and proportional improvements in environmental, health and safety measures. The legal documents currently in force have no specific regulations on workplace safety in the electronics industry.

Key findings from the interviews include:

- All workers reported extreme fatigue and fainting or feeling dizzy at work.
- Workers reported that miscarriages are extremely common, even expected.
- Workers must stand throughout their 8- to 12-hour shifts in areas with high noise levels and many are kept on alternating day and night shift schedules.
- Pregnant workers usually stand throughout their shifts to avoid having the company deduct money from their wages for taking breaks.
- More than half of the interviewed women have children, but they live with their grandparents in another town or city.
- Workers reported problems with eyesight, nose bleeds, aches in stomach, bones, joints and leg problems.
- Workers lives are controlled inside and outside of work. Breaks are short and limited and workers must request special passes to use the rest room. Many live in Samsung dormitories, 6-8 to a room, where visitation is limited.
- The need for further research regarding chemical exposure is called for. Workers did not consider assembly line work a chemical risk but work in open factory settings where other workers likely use a variety of substances.

Women workers in Vietnam have the right to a safe and healthy environment. Based on this study, the research team has the following recommendations:

1. The electronics industry should obey Vietnamese laws governing overtime work and violators should be prosecuted severely enough to stop further violations.
2. The electronics industry should obey Vietnamese laws governing provision of copies of work contracts to workers. Companies such as Samsung Vietnam that violate these laws should immediately provide copies to all workers and be prosecuted severely enough to stop further violations.
3. Comprehensive regulations should be developed that ensure worker safety in the electronics industry, including regulations relating to chemicals, electromagnetic fields, radioactivity, and other relevant potential harms. Exposure limit values should be

- protective of the most vulnerable populations, which include women of child-bearing age, and should provide equal protection in the workplace and the community.
4. Pollutant release and transfer data should be required for the electronics industry and the information should be publicly available.
  5. Electronics industry companies and factories should be required to make public all chemicals used by them in order to ensure worker and community right to know.
  6. Producers and manufacturers should be required to provide ongoing understandable and free health and safety information to workers about all substances used by them in order to ensure the workers' safety and health. The government has a critical role to enforce provision of health and safety information to workers.
  7. Working hours and schedules should be improved to guarantee sufficient protection of the health and safety of workers, especially considering the need for work-life balance and the vulnerability of ill health among young female workers.
  8. The government should collaborate with the International Labour Organization (ILO) on the collection and reporting of worker health information specific to the electronics industry. Companies, trade unions and other actors should be encouraged to contribute to this process.
  9. Independent in-depth research on health and safety in the Vietnamese electronics industry should be carried out to reveal impacts on workers' health and form the basis of improvements in working conditions. Gender disaggregated data should be a key part of study plans and reporting of results.
  10. Public awareness should be improved by providing media and the public with information about chemical safety, evidence of harms in other countries, and SAICM recommendations on electronics, including those from the Vienna 2011 expert group meeting. The SAICM national focal point, trade unions, public interest NGOs, and other stakeholders should be encouraged to contribute to this process.
  11. Studies should identify if environmentally unsound technologies, processes, and chemicals, that are prohibited, cause environmental degradation, or found to be harmful to human health in other countries have been transferred to Vietnam. No double standards should be allowed.
  12. The subcontractor chains in the Vietnamese electronics should be investigated. If companies transfer technologies or hire subcontractors, the processes and products should be environmentally sound and the companies should ensure that the subcontractors have the capacity to protect workers and the surrounding communities before making the work contract.
  13. The government should guarantee that workers have the right to organize into a trade union as outlined in ILO Conventions 87 and 98.

## References

- ACS. (2015). *ACS - Chemistry for Life*. Retrieved from acs.org:  
<https://www.acs.org/content/acs/en/education/resources/highschool/chemmatters/past-issues/archive-2014-2015/smartphones.html>
- American Public Health Association. (2012). *Improving occupational and environmental health in the global electronics industry*. Retrieved from <http://apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/>
- BioInitiative. (2012). *BioInitiative Report*. Retrieved from BioInitiative.org: (2012) A rationale for biologically-based exposure standards for low-intensity electromagnetic radiation.  
<http://www.bioinitiative.org/table-of-contents/>
- CDI. (2014). “*Bước đầu đánh giá ảnh hưởng của điều kiện lao động đến người lao động nhà máy sản xuất, lắp ráp điện tử ở Việt Nam*”. Hà Nội: CDI.
- China Labor Watch. (2012). *China Daily*. Retrieved from chinadaily.com.cn:  
[http://www.chinadaily.com.cn/china/2012-09/25/content\\_15782707.htm](http://www.chinadaily.com.cn/china/2012-09/25/content_15782707.htm)
- Cho, J. (2015). *The Business Korea*. Retrieved from businesskorea.co.kr: Cho JY (2015) 50% of Samsung mobile phones made in Vietnam, Business Korea  
<http://www.businesskorea.co.kr/english/news/industry/8785-samsung-made-vietnam-50-samsung-mobile-phones-made-vietnam>
- Cường, V. (2012, 3 7). *Tin công nhân bị teo buồng trứng: Nhà máy Samsung nói gì?* Retrieved from Infonet: <http://www.baomoi.com/tin-cong-nhan-bi-teo-buong-trung-nha-may-samsung-noi-gi/c/8020346.epi>
- Dantri. (2017). “*Vietnam is a “construction site” of the electronics industry*”, Hanoi, June 2017. Hanoi.
- European Commission. (1998). *EU-Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work*. European Commission.
- European Parliament and the Council. (2003). *Access to European Union law*. Retrieved from EUR-Lex: <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02003L0010-20081211&from=EN>
- GSO. (2014). *Báo cáo tình hình kinh tế xã hội 2013*. Hà Nội: NXB Thống kê.
- GSO. (2015). *Báo cáo Lao động việc làm 2013*. Hà Nội: NXB Thống kê.
- IARC. (2007). *The International Agency of Research on Cancer*. Retrieved from iarc.fr: Reference: IARC (2007) IARC Monographs Programme finds cancer hazards associated with shiftwork, painting, and firefighting <https://www.iarc.fr/en/media-centre/pr/2007/pr180.html>
- IARC. (2010). *The International Agency for Research on Cancer*. Retrieved from iarc.fr: Reference: IARC (2010) Painting, firefighting, and shiftwork, IARC Monographs Volume 98  
<http://monographs.iarc.fr/ENG/Monographs/vol98/mono98.pdf>
- ILO. (1998). *ILO Declaration on Fundamental Principles and Rights at Work*. Retrieved from <http://www.ilo.org/declaration/lang--en/index.htm>
- ILO. (2016). *International Labour Organization*. Retrieved from ILO.org: ILO: “Cooperation consensus in improving the quantity and quality of employment in Vietnam electronics industry”, Hanoi, 2016  
[http://www.ilo.org/hanoi/Informationresources/Publicinformation/newsitems/WCMS\\_530711/lang--vi/index.htm](http://www.ilo.org/hanoi/Informationresources/Publicinformation/newsitems/WCMS_530711/lang--vi/index.htm)
- ILO. (2016, 9 30). *Tổ chức Lao động Quốc tế*. Retrieved from ILO: [www.ilo.org](http://www.ilo.org)
- ILO. (2017). Retrieved from [http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11300:0::NO::P11300\\_INSTRUMENT\\_ID:312243](http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11300:0::NO::P11300_INSTRUMENT_ID:312243)



- ILO. (2017). *ILO*. Retrieved from ILO.Org:  
[http://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300\\_INSTRUMENT\\_ID:312232](http://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312232)
- IPEN. (2008). *An NGO Guide to SAICM: A framework for action to protect human health and the environment from toxic chemicals*. IPEN <http://ipen.org/documents/ngo-guide-saicm-2008>.
- ITUC. (2016). *International Trade Union Confederation*. Retrieved from ITUC-CSI.ORG:  
 International Trade Union Confederation and IndustriALL (2016) Samsung – modern tech, medieval conditions [http://www.ituc-csi.org/IMG/pdf/samsung\\_web\\_en.pdf](http://www.ituc-csi.org/IMG/pdf/samsung_web_en.pdf)
- ITUC. (2016). *International Trade Union Confederation*. Retrieved from ITUC-CSI.Org:  
 International Trade Union Confederation and IndustriALL (2016) Samsung – modern tech, medieval conditions [http://www.ituc-csi.org/IMG/pdf/samsung\\_web\\_en.pdf](http://www.ituc-csi.org/IMG/pdf/samsung_web_en.pdf)
- Kim I et al, K. M. (2015). *Reproductive Hazards Still Persist in the Microelectronics Industry: Increased Risk of Spontaneous Abortion and Menstrual Aberration among Female Workers in the Microelectronics Industry in South Korea*, *PLoS One* doi: 10.1371/journal.pone.0123679. PLoS One doi.
- Kim MH et al, K. H. (2014). *The health impacts of semiconductor production: an epidemiologic review*, *Int J Occup Environ Health* 20:94-114. *Int J Occup Environ Health*.
- MOH. (2016). Retrieved from Ministry of Health (2016): National Technical Regulation on Noise - Permissible Exposure Levels of Noise in the Workplace
- MOLISA. (2016). *Báo cáo Thanh tra Lao động Thương binh Xã hội*. Hà Nội: MOLISA.
- MOLISA. (2016). *Khảo sát Chất lượng việc làm thông qua các thực hành lao động có trách nhiệm trong ngành điện tử tại Việt Nam*. Hà Nội: MOLISA.
- MONRE. (2010). Retrieved from Ministry of Natural Resources and Environment (2010): National Technical Regulation on Noise (QCVN 26:2010)
- MPI. (2017, 5 25). 5 tháng đầu năm thu hút thêm 12,13 tỷ USD vốn FDI. Hà Nội, Hà Nội, Hà Nội.
- Nghĩa, H. L. (2008). Liên kết sản xuất trong ngành công nghiệp điện tử Việt Nam: Một số vấn đề đặt ra. *Tạp chí Công nghiệp*.
- Ngo, H. (2013). *Asia Monitor Resource Center*. Retrieved from AMRC.Org: Ngo H (2013) Mapping the supply chain of the electronics industry in Vietnam, Labour rights in high tech electronics; Case studies of workers' struggles in Samsung Electronics and its Asian suppliers, Asia Monitor Resource Center  
<http://www.amrc.org.hk/sites/default/files/Labour%20Rights%20in%20High%20Tech%20Electronics%20-%20AMRC.pdf>
- Ngo, H. (2013). *Asia Monitor Resource Center*. Retrieved from AMRC.Org: Ngo H (2013) Mapping the supply chain of the electronics industry in Vietnam, Labour rights in high tech electronics; Case studies of workers' struggles in Samsung Electronics and its Asian suppliers, Asia Monitor Resource Center  
<http://www.amrc.org.hk/sites/default/files/Labour%20Rights%20in%20High%20Tech%20Electronics%20-%20AMRC.pdf>
- Ngo, H. (2015). *IndustriAll Union*. Retrieved from Industriall-union.org: [http://www.industriall-union.org/sites/default/files/uploads/documents/2015/ICTEE-Malaysia/huong\\_presentation\\_12.6.pdf](http://www.industriall-union.org/sites/default/files/uploads/documents/2015/ICTEE-Malaysia/huong_presentation_12.6.pdf)
- Nguyễn Hoàng Anh, V. T. (2009). Bài học kinh nghiệm trong việc tham gia chuỗi giá trị toàn cầu ngành điện tử của Trung Quốc. *Tạp chí nghiên cứu Đông Bắc Á*.
- Nhiều, N. T. (2011). *Chuỗi giá trị toàn cầu về mặt hàng điện tử và khả năng tham gia của Việt Nam*. Hà Nội.
- Omar, H. (2011, July). A review on health effects associated with prolonged standing in the industrial workplaces. *URRAS*, 8(1).

- OSHA. (2017). *Occupational Safety and Health Administration*. Retrieved from OSHA.gov: <https://www.osha.gov/SLTC/noisehearingconservation/healtheffects.html>
- The Ecology Center. (2011). *The Ecology Center*. Retrieved from ecocenter.org: [http://www.ecocenter.org/healthy-stuff/product-search?title=&field\\_product\\_tags\\_tid=356](http://www.ecocenter.org/healthy-stuff/product-search?title=&field_product_tags_tid=356)
- The Inquirer. (2013). *The Inquirer*. Retrieved from The Inquirer: Reference: Page C (2013) Samsung workers given 32 seconds to assemble phones; Brazil seeks damages for poor working conditions, The Inquirer <https://www.theinquirer.net/inquirer/news/2288775/samsung-workers-are-given-32-seconds-to-assemble-phones>
- Thuat. (2017). Bên trong nhà máy sản xuất GalaxyS8 tại Thái Nguyên. *Tri thức trẻ*.
- Trang, V. (2016). *Hành trình 20 năm dấu ấn của Samsung tại Việt Nam*. Hà Nội: Academia.edu.
- trí, D. (2017, 6 17). *Dân trí*. Retrieved from Diễn đàn Dân trí Việt Nam: <http://dantri.com.vn>
- UNEP. (2009). *Asia-Pacific Recommendations on hazardous substances within the lifecycle of electrical and electronic products*. UNEP.
- UNEP. (2009). *Report of the International Conference on Chemicals Management on the work of its second session, Strategic Approach to International Chemicals Management, Hazardous substances within the lifecycle of electrical and electronic products*. UNEP.
- UNEP. (2012). *Report of the international workshop on hazardous substances in the lifecycle of electrical and electronic products, SAICM/ICCM.3/INF24*. UNEP.
- VIELINA. (2011). *Nghiên cứu đánh giá thực trạng và đề xuất các giải pháp phát triển ngành công nghiệp điện tử Việt Nam đến năm 2020*. Hà Nội: Bộ Công thương.
- Vuong, T. (2016). *“Hallmark of a 20-year journey of Samsung in Vietnam”*, Hanoi, 2016. Hanoi: Hanoi.

## Annex 1: Worker Stories

### Story 01

“A” divorced her husband 6 years ago, and has a daughter, who is living with her mother. *“I have to take care of my mother too. My mother is in the same situation as my parents had divorced. Then my mother lived with my younger brother, but after he got married, he and his wife left her to live independently. Currently, only my daughter is living with her.”*

A had been a farmer before going to work at Samsung. She said, *“I heard about an employment opportunity at Samsung. Someone also handed out leaflets to us. However, I did not go to the district to submit my application. I went directly to the factory and asked a worker for help and was shown to the recruitment office.”* A was recruited together with others, mostly women. A said, *“It was more difficult for male job applicants as they had to go through many rounds of interviews. Most of the male applicants failed. I think it might be women are more persistent while men are quarrelsome.”*

A signed an official contract in 2014 after 2 months’ probation. She works at a mobile main line. *“I work at the main line manufacturing mobile sets.”* Her monthly salary is enough to feed her daughter. *“Every month I receive a basic salary of 6.5 million VND. Room rental costs 700,000 VND. After paying foods and travels, I can save only 3 million VND a month.”* The daily routine is “rather smooth.” *“However, the other day I was scolded by the foreman. Oh, I wanted to cry! I don’t know why the product I made was defective, and I was sent to a retraining course. It was the first time I had such a mistake.”* For A, working in this environment she does not feel tense, but sometimes under pressure. *“Sometimes I feel as working under pressure, particularly when the products were defective and we had to repair them many times. I had to note and test and felt very tired, my co-workers too. Sometimes I felt depressed. But later I managed my mood and felt normal. I went to work the following morning in a normal mood.”*

A often suffers from minor illnesses and nosebleeds. *“In the past, I sometimes got a nosebleed, but it has become serious now. I often get a nosebleed after a night shift, when I am thinking too much or feeling tired and after having meal.”* Some co-workers also suffer from nose bleeding, but A suffers the most. *“I am the one who bleeds the most. I went to the doctor and was told it was only sinusitis. I don’t know if the vein there is too thin or what?”* Since A started working there she has fainted twice. She was taken to the health station *“to rest for a while and then come back home by myself.”* Her workshop is very noisy. *“An air-conditioner is available there. If we feel cold, they will turn it up, and if we feel hot, they will turn it down, or put it at a medium temperature. It is always noisy there. The noise meter always points at 82 dB and higher, which is exceeding the permissible level. In the production workshop, the noise is a mixture of sounds generated by machine operation, people walking back and forth, talking and even scolding each other.”*

A works in an all-female team. *“The only man here is the foreman. He is younger than me so he calls me elder sister. He has the right to scold me because he is the foreman. As he is the sole man here, it is funny when sometimes he jokes about it, something like ‘you should not harass me (sexually), glance at me or look at my sensitive part.’”*

As workers have to stand and walk most of the time, A finds out that pregnant workers feel tired. *“Some of us stand during work while others have to shuttle between two ends of the production*

*line. It is not a concern for a young and single woman, but it is very difficult for a 3-month pregnant woman. As they have to stand or shuttle all day long, many have suffered a miscarriage. However, this is my own opinion for the reason of their miscarriages because many others still have safe and healthy births.”*

*“I try to go to work when I get sick, for example when I feel a little dizzy and nausea I still go to work although I am very tired. I may lose a lot of bonus if I stay off work for a day. The daily payment is not high, but if I stay off work for a day, I shall lose about 01 million VND.”*

A’s mother is asking her to take any job close to their house so that she can take better care of her daughter. *“I’m under a pressure as my mother insists on me leaving the job, but I told her I should try to save money to build the house.” “I only wish that the working time is stable and it might be better to my health.”* Currently, A has no specific plans for her future.

## **Story 02**

*“B” is the youngest child in a family with 4 children. She said, “My parents have talked about applying for a job somewhere, but we need money, so I shall work here for some years then come back home.”* Currently, B is studying on the weekends and asked the company to give her a schedule that would permit her to go to Hanoi for school. However, this has seemed difficult to arrange. *“They told me that they can arrange the work for me to go if it is a day shift, but it would be difficult for them if it is a night shift. So, in that case, I shall go to school in daytime and come back to work in the night shift.”*

B has been working for Samsung for several years. At the beginning, a friend asked her to prepare and submit the application. However, after the interview, B was recruited while her friend failed. *“The interview was very complicated. First, we had to answer the interview questions and then did a test, something like an IQ test. After that came a health check and a job training course. The training time depends on the situation. If they are short of workers, we would be sent to the workshop after less than a week of training. But if not, we have to go through a 1-week training course before officially taking the job.”* Currently, B receives a monthly salary of more than 6 million VND. She is working at a finished product assembly line. *“Take a telephone set as an example. We assemble all the parts for a set and then it will go through a functional testing in another workshop. After that the telephone will be put into use.”*

The quantity of work is measured based on output. *“We have to meet the daily output quota assigned to us. For example, I have to assemble 2000 pieces a day. If I meet that quota, it means I have done enough. Output depends on the order. For example, if the customer orders more phone sets of this model, we have to produce more. To meet the requirement, we have to work overtime and therefore, get more pay.”*

Before going to work at Samsung, B’s family members worried very much about exposure to toxic substances. *“It was rumored that working at Samsung I would be exposed to toxic substances. So, before going to work at the factory I told my parents that if I found it was impossible to work I would return home. However, I thought that if I would be exposed to toxic substances, thousands of others would also be exposed or even die, so it might be no problem. As we work at the finished product workshop, we should go through the magnetic door every day to prevent any case of stealing. My recent periodic health checks show a good result. I don’t know whether I will get sick in the future but currently I am healthy. We are all worried about the*

magnetic door. Frankly, we don't know what it is. However, it can check people going in and out, so rumors like this spread."

B had signed a 2-year employment contract, and has signed another contract for 3 years. "After the termination of this contract, I shall be allowed to sign a 5-year employment contract, but I might not sign it depending on the outcomes of my studies."

B often suffers from tiredness and headache. "During a woman's period, I often have a stomach ache, but I don't want to say the truth so I tell them I am tired and can't work. Then I am allowed to rest for 2 or 3 hours. A dressing room is available within the workshop and I go to rest there, or go to the health station. The pregnant workers who suffer from morning sickness do the same. We don't want to go to the health station which is far from the workshop. We are tired and only want to lie down. If anyone wants to take a sick leave, she should have a hospital paper confirming her illness. The hospital won't give any paper to confirm tiredness. And if we often ask for a sick leave like that, the company will lack workers to run the assembly line. So, I keep trying to work."

Very often, her workshop is managed by a male. "I think it is not suitable for a female worker to work as a forewoman. She might be busy with her children. If she is newly married, she would get pregnant after assuming the post for just a month and after that have a maternity leave. Then the company has to train a new foreman to replace her. So, it is better to put a man in this position, he can do the job for a longer time and become more professional."

Currently, B only wishes to have a longer break time between work hours. "We can go to the canteen to have a drink or just to rest. According to Samsung regulations, we can only sleep in sitting and never in lying position."

### Story 03

"C" knew nothing about the company and just followed her friends. "My parents said if I wished to go they would let me go. At first, I had worried about living conditions here. However, there is no problem as I have lived in the company dormitory since then."

C finds it is very difficult for her to adapt to the rotational shift work. "I think the shift rotation makes me tired. I can't adapt immediately to the change from a day shift to a night shift. For example, if I work in a night shift, I have to sleep the whole day before. Working at night time is more tiresome. I can sleep the following day but it cannot make up for the night before. I was always in that state of health in the first two years, now it remains the same, however, my co-workers told me that I would gradually get used to it."

C cannot remember the content of the employment contract, except its duration. She remembers that she signed the first contract for 2 years and the second for 3 years. There are 3 levels of monthly bonus, A, B and C. She is professional and experienced but does not think of promotion to avoid any pressure. "We will be reprimanded by our manager if we fail to fulfil the output quota. In my workshop, quality is first. To boost output, we have to do a lot of other work, particularly when the company cuts down the workforce in my workshop. For example, previously 3 workers did a job, then 2 and now only 1 does that job."

Facing such pressure, they often scolded and shouted at each other. However, "after scolding, we are still good friends. We are all under pressure. Each time confronting a pressing issue, we

*invite each other to eat together or have a talk after work to find out a solution. Anyone who makes a mistake will admit and correct it. By doing so, we build good relationship.”*

Normally after returning home from work, C just watches a movie then goes to bed. *“Sometimes I visit my elder sister. I rarely go around as after work I feel tired and just want to sleep.”*

#### **Story 04**

“D” works in the inspection area. *“I do not contact any machines and chemicals. I only put the glass object in front of me to inspect it.”* After completing upper secondary school, D followed her friend to apply for a job at this company. She heard nothing about the company before that. She said, *“After recruitment, the company sent a car to take us here. We had to attend a training course for one or two weeks. The company paid for our meals and accommodation.”* She spends time after returning from work to rest and sleep.

Most of her co-workers in the workshop are women. *“There are no men here. The men work in other workshops, doing heavy jobs such as operating machines.”* In her workshop, there are many pregnant workers; *“they have more time for meals and are allowed to sit while working.”* However, pregnant workers usually try to avoid sitting so that the company does not deduct money from their wages.

D often suffers from a runny nose, sore throat and sometimes, high fever *“when the weather changes.”* *“Once I got a high fever so I called the foreman. He called the company manager, and then the company sent an ambulance to take me to the health station. There they gave me first aid and some medicine and sent me to the hospital. I came home by myself when I felt better. Later, I had a stomach problem. I often have abdominal cramping after work or after changing from a day shift to a night shift. I think it is because the stomach cannot adapt to the change as during a day shift I eat a lunch at noon time while during a night shift I eat a meal at 12am. I sleep all day and do not eat anything. If it is too painful I ask for a leave. Normally the pain stops in 4-5 minutes then comes back half an hour later. Sometimes it is only a dull ache and I continue working.”*

D has also seen many workers faint at work, and attributes it to the clothing worn in cleanrooms. *“The cleanroom clothes are too tight and it is easy to faint. Some workers in my workshop have fainted too, but not many because we do not have to tight clothes like those working in the cleanroom.”*

D has found that her eyesight is deteriorating. *“A recent test showed that I suffer from myopia (3/10).”* *“As I have to fulfil the output quota of one or two thousand pieces, I must concentrate on the job and have no time to look afar, therefore my eyesight is affected.”* D is looking for another job; *“My friends all have complained about the boring job they have to do day after day.”*

#### **Story 05**

“E” graduated from upper secondary school, then stayed home for some months before following her friends to work at Samsung. Currently, E has a boyfriend and they are going to get married. E signed a 2-year employment contract. After its termination, she signed another contract for 3 years. She is now staying in the company dormitory, sharing a room with 5 others (6 workers per room).

E plays with her mobile phone, watching a movie or resting during free time after work. *“I play with the phone and watch films most of the time. After work, I came back to my room, do personal hygiene, eat, drink, rest and sleep. I call my friends and family members, then watch films. I feel tired if I work overtime sometimes. But if I work overtime regularly, I feel normal.”* Her daily activity schedule depends on the work time. *“There is only a difference between a dayshift and a nightshift. If I work during the nightshift, I go to bed at 10 am and go to work at 6 pm. If I work during the dayshift, I have lunch (main meal) at 12 pm (noon). If I work during the nightshift, I have dinner (main meal) at 12 am (midnight).”* E works on the main line in assembly. *“We do not contact chemicals. Those who work with chemicals received special training. We only work with dry parts, we wear work gloves and we feel safe and not to be exposed to chemicals.”*

Her periodic health exams showed a good result. *“We have health exams once a year. To tell the truth, if I didn’t work for the company, I wouldn’t go to the hospital for a regular health check, unless I wasn’t feeling well or if was sick. In fact, I don’t see the benefit of having regular health exams because I feel healthy.”* The regular health exams measure height and weight, check the respiratory system, and test for HIV and skin diseases. *“They check our health to discover any transmitted diseases in order to prevent them from being transmitted to others.”* Her latest health exams discovered a slight stomach trouble. *“After asking me whether I often had a stomach ache and I said yes, he concluded like that.”* E said that most of the workers were only concerned about their health condition according to the company’s classification. *“The company classifies our health into 3 categories. If my health is classified as a category 1, it means I am in very good condition. In general, we can’t read through the medical exam results as we don’t understand very much about the medical terms. We are only concerned if we suffer from any illnesses.”* E often suffers from slight flu and minor sickness. *“I think it is normal when the weather suddenly changes from sunny to rainy. In such changing weather, I often have a runny nose and headache. Other workers are in the same situation.”* However, E keeps on working. *“I think I should try to make money. If I stay off work for some days, my payment will be reduced by a lot. Fifteen workers are needed to operate an assembly line. If 2 of them are on sick leave, how can they operate? If I asked for a sick day, the foreman would think that I wanted a day off to go out or do some private jobs. That is why they don’t allow me to stay away from work in these situations.”*

Her co-workers said, *“Our skin is affected after working a nightshift. We are working while others sleep and sleeping when others are awake. It does harm to our health. Our feet seem to become swollen as we stand all day or night long. When we first came to work, our feet and knees often felt sore, tired and painful. If we wore clogs, our feet became red and swollen when we came back home. However, we have gradually gotten used to it.”*

Once, E fainted while at work. *“One night when I was still new to the work and healthy. I was singing and talking with others then suddenly I had low blood pressure and fainted. It was a nightshift. I was lucky to have a co-worker who knew traditional medicine give me first aid treatment. Others called an ambulance. Someone took me to the car then to the company’s health station. The doctor measured and checked my blood pressure and temperature. I think I was not in a critical situation. After that I walked home by myself. I had a day off the following day then went to work as normal.”* E said she had seen many similar fainting cases in the company.

E plans to work till the end of the year before leaving the company to be trained for another job. *“We have the right to unilaterally terminate the contract and should notify the company one*

*month in advance. We shall submit the application for leave on the 10th or 25th day of the month to let them manage their manpower. Working here is not my purpose. I feel fed up now. I work here to make money for immediate living needs. In the future, I want to come back to live with my parents or get married to a husband living close to my parents' house. My parents do not want me to work here either. Now I am going to a job-training school. Then I want to find a job close to my parents' house or open my own shop.”*



## Annex 2: Timeline of the Electronics Industry in Vietnam

According to research from the Ministry of Industry and Trade, the process of establishing and developing the Vietnam electronics industry can be divided into several stages (VIELINA, 2011).

**1975 – 1990:** The stage of establishing the electronics industry in Vietnam. After 1975, the existing electronics enterprises in North Vietnam together with the newly taken over electronics companies from the South laid a foundation for the formation of the electronics industry. In 1984, the Vietnam General Department of Electronics and Informatics was founded with a scientific structure comprising State management agencies (under the Council of Ministers) and local member organizations (including production enterprises, service, supply and warranty enterprises), and the Institute for Development Studies. In the late 1980s, the Vietnamese electronics industry was already able to assemble some essential electronic products to meet local demand. By 1988, the General Department was dissolved and merged into the Ministry of Heavy Industry (Nghĩa, 2008).

**1991–1995:** This was the most difficult stage of the Vietnamese electronics industry. Most companies were dissolved or changed their forms of operation.

**1996 – 2000:** This was the golden stage of the Vietnamese electronics industry when Vietnam started to move strongly toward a market economy and the United States removed its embargo against Vietnam. Many famous electronics companies from countries with developed electronics industries entered Vietnam, undertaking joint ventures with local enterprises or investing in production lines. However, they mainly assembled products. Only two companies invested in manufacturing spare parts on a large scale, but mostly or solely for export: 1) Orion from South Korea, entering into a joint venture with Hanoi Electronics Company (HANEL), and invested in building a cathode ray tube (CRT) factory with an investment capital of \$178 million USD and a capacity of 1.6 million units/year, earning \$100 million USD/year (Nhiều, 2011). Part of its products were supplied to local TV assembly factories and a larger part designated for export. In 2008, being unable to afford new technologies for LCD manufacturing to meet market demand, the factory declared bankruptcy and stopped production after 15 years of operation. 2) Fujitsu from Japan invested nearly \$200 million USD to build a factory specializing in computer motherboards and printed circuit boards for hard drives in the Bien Hoa Industrial Zone, Dong Nai province in 1996. The high-tech operation could manufacture 14-layer printed circuits, but all of the products were for export with an annual export value of \$500 million USD.

**2001 - 2005:** In this stage, local market demand for consumer electronics products was not big and the assembly of consumer electronics products was not very profitable. In the face of fierce competition from FDI companies and the localization policy of the government, the number of consumer electronic assembly companies declined rapidly. From 100 companies assembling consumer electronics products in late 1990s, only 12 companies existed in 2005, including leading Japanese and Korean electronics companies such as Sony, JVC, Toshiba, Panasonic, Samsung, LG, and Daewoo along with TCL from China and few famous Vietnamese companies such as VTB, Hanel, Belco, and Tien Dat (Nguyễn Hoàng Ánh, 2009).

**2006 - 2010:** Starting in January 1, 2006 under the Association of Southeast Asian Nations (ASEAN) Free Trade Area (AFTA) roadmap, Vietnam had to reduce import tax for imported

electronics and electrical appliances in complete units from ASEAN countries from 30 - 40% down to 0 - 5%.

Since January 1, 2007, after Vietnam became a full member of the World Trade Organization (WTO), government support and preferential treatment given to the electronics industry were also removed as a condition of Vietnam's accession to the WTO. Some FDI companies went bankrupt, stopped production or moved to commerce and services. However, since Vietnam's accession to the WTO, a new foreign investment wave has flowed into Vietnam, including major electronics industry investments from big companies such as Samsung Electronics (South Korea), Intel (USA), Nidec (Japan), Foxconn (Taiwan), Meikom (Japan), and Nokia (Finland). The investment projects by these groups increased the FDI capital in the Vietnamese electronics industry to over \$10 billion USD.

## Annex 3: Hazardous Chemicals in Electronics is a Global Emerging Policy Issue

The Strategic Approach to International Chemicals Management (SAICM) is a global policy agreement led by UN Environment to promote chemical safety. In adopting SAICM in 2006, governments and other participants in the International Conference on Chemicals Management (ICCM) agreed that improved measures are needed to prevent harmful effects of chemicals on the health of children, pregnant women, fertile populations, the elderly, the poor, workers and other vulnerable groups and susceptible environments. They noted that some progress has been made in chemicals management, but declared that progress has not been sufficient globally, and that the environment worldwide continues to suffer from air, water and land contamination that impairs the health and welfare of millions (IPEN, 2008).

### **Hazardous chemicals in electronics becomes a global issue in 2009**

In 2009 at the 2<sup>nd</sup> International Conference on Chemicals Management (ICCM2), more than 100 countries agreed with the proposal by the African region and Peru that hazardous chemicals in the lifecycle of electrical and electronic products was a global emerging policy issue (UNEP, 2009). The ICCM2 decision noted the problems with electronic waste and the need to phase-out hazardous chemicals and consider all stages of the product lifecycle. Delegates at ICCM2 called for a workshop to “*identify and assess where issues relating to the sound management of chemicals arise during the lifespan of electrical and electronic products*” and to make recommendations for dealing with them. The workshop was subsequently held in Vienna, Austria in 2011.

### **Important policy recommendations for action emerge in 2011**

In 2011, the United Nations Industrial Development Organization (UNIDO), and the secretariats of the Basel and Stockholm Conventions held the electronics lifecycle workshop in Vienna, Austria. The Vienna meeting included 32 governments (including Vietnam<sup>2</sup>), the industry, and public interest NGOs. The participants represented countries where design, production, and electronic waste dumping occur and this made its recommendations particularly robust. The Vienna meeting produced an extremely important comprehensive set of global policy recommendations on chemicals in electronics (UNEP, 2012). The recommendations cover upstream (design), midstream (production) and downstream (wastes) parts of the lifecycle. Some key recommendations on the production part of the lifecycle include:

- Governments, intergovernmental organizations, and non-governmental organizations including the private sector and others should encourage and promote sustainable production and pollution prevention by using cleaner production techniques, waste minimization, and safer substitutes whenever available;
- The producers and manufacturers should prioritize reduction of exposure to chemicals, primarily by elimination or substitution of the most hazardous substances and production processes, especially those processes involving worker and community exposure to substances of concern. In the present context, substances of concern include those that are persistent, bioaccumulative and toxic and/or those that are carcinogens, mutagens,

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<sup>2</sup> The participants included 32 government representatives from both electronics manufacturing countries (China, Czech Republic, Germany, Indonesia Japan, Malaysia, Thailand, and Vietnam) and countries affected by electronic waste (China, Colombia, Cote d’Ivoire, Ethiopia, Ghana, Indonesia, Malaysia, Mozambique, Nigeria, Peru, Philippines, Tanzania, Thailand, Vietnam, and Zambia.)

reproductive or developmental toxins, neurotoxins, neurodevelopmental toxins, respiratory toxins, immunotoxins, organ system toxins, and/or endocrine disrupting compounds;

- Specific protection and prevention measures (European Commission, 1998):
  - The employer should ensure that the risk from a hazardous chemical agent to the safety and health of workers at work is eliminated or reduced to a minimum.
  - In applying paragraph 1, substitution should by preference be undertaken, whereby the employer should avoid the use of a hazardous chemical agent by replacing it with a chemical agent or process which, under its condition of use, is not hazardous or less hazardous to workers' safety and health, as the case may be.
  - Where the nature of the activity does not permit risk to be eliminated by substitution, the employer should ensure that the risk is reduced to a minimum by application of protection and prevention measures. These will include, in order of priority:
    - design of appropriate work processes and engineering controls and use of adequate equipment and materials, so as to avoid or minimise the release of hazardous chemical agents which may present a risk to workers' safety and health at the place of work;
    - application of collective protection measures at the source of the risk, such as adequate ventilation and appropriate organizational measures;
    - where exposure cannot be prevented by other means, application of individual protection measures including personal protective equipment.
- Environmentally unsound technologies and products that are prohibited or cause severe environmental degradation or are found to be harmful to human health should not be transferred to other countries (UNEP, 2009);
- Information on health and safety for humans and the environment for the substances used in manufacturing of electronic and electrical products and present in products should not be considered confidential;
- If companies transfer technologies and products to subcontractors they should be environmentally sound and the companies should ensure that the subcontractors have the capacity to protect workers and the surrounding communities before making the transfer.
- Producers and manufacturers, with oversight by the government and the full participation of worker and community representatives should ensure (and report the results to appropriate governmental authorities of):
  - Comprehensive, occupationally relevant health surveillance for all of its workers;
  - Comprehensive ongoing industrial hygiene and environmental monitoring to measure the release and exposure to all hazardous materials used in manufacturing and production;
  - Access to these data (and adequate funding) to ensure comprehensive and independent epidemiological assessments of worker health;
  - Action plans to preserve and protect worker health based on these data.
  - In situations where pollution from electronics production facilities has been found in surrounding communities, the manufacturers and producers should cooperate with health researchers and investigators to assess and control adverse health impacts, especially with respect to vulnerable populations.

- Governments should guarantee that workers have the right to collectively bargain as a fundamental human right, guaranteed by the Universal Declaration of Human rights (adopted in 1948 by the United Nations; the right to bargain collectively is subsumed under the rights to freedom of association and the right to organize into a trade union --see Articles 20 and 23). The right to organize and bargain collectively is explicitly covered under International Labor Organization Convention 98 adopted in 1949. Pursuant to these rights, all workers involved in each stage of the life cycle of electronics production should have the right to:
  - Form unions and to organize for self-protection;
  - To form health and safety committees;
  - To receive training to develop the capacity to monitor and enforce effective health and safety protections in the workplace;
  - To refuse unsafe or unhealthy work; and the right to be protected from retaliation for exercising those rights (right-to-act and “whistle-blower” protection) (ILO, 1998);
- Governments are encouraged to develop and implement effective liability and compensation legislation for the victims of toxic exposures in the workplace and the community. Given that the electronics industry is characterized by multiple chemical exposures to chemicals of concern, many of which are in addition inadequately tested and regulated, and the frequent changes in process chemicals, it is particularly important to develop compensation systems funded by the employers that are designed to address these inherent challenges to fair compensation by developing mechanisms that assure that workers harmed by such exposure qualify for adequate and timely compensation, as well as treatment and rehabilitation.

### **American Public Health Association resolution on occupational health in the electronics industry**

The American Public Health Association (APHA) was founded in 1872 and is a leading body of health professionals from 40 countries including physicians, nurses, and researchers. In 2012, APHA passed a consensus resolution entitled, Improving occupational and environmental health in the global electronics industry (American Public Health Association, 2012). The resolution describes how the rapid growth of the industry has been accompanied by increased use of toxic substances and adverse health outcomes – particularly in Asia. Among its key recommendations, APHA included the following:

- The public health community should promote and disseminate independent research on the risks associated with the electronics industry.
- Manufacturers of electronics should provide workers and surrounding communities with information on their use and release of chemicals and other potential sources of exposures, consistent with the fundamental public health principle of right-to-know.
- Manufacturers of electronics should provide workers with access to exposure monitoring protocols and results, as well as medical records prepared and/or maintained by the manufacturers or their contractors.
- Manufacturers of electronics should reduce the use of toxic substances by implementing designs to eliminate or substitute the most hazardous compounds and production processes with safer chemical and nonchemical alternatives that reduce the potential for harm to human health and the environment
- Manufacturers of electronics should ensure that subcontractors have the capacity to protect workers and the surrounding communities before transferring technologies and manufacturing

processes to them and continue to monitor subcontractors during manufacturing to ensure protection of worker and community health.

### **Hazardous chemicals in electronics becomes part of SAICM's Global Plan of Action**

In 2012, delegates at the 3<sup>rd</sup> International Conference on Chemicals Management (ICCM3) made hazardous chemicals in electronics part of SAICM's Global Plan of Action. The African region pushed for this action with strong support from other countries. The result included adding 13 items to SAICM's Global Plan of Action tackling topics such as green design, environmentally sound manufacturing, and awareness-raising. ICCM3 also encouraged use of the Vienna meeting recommendations and agreed to create an international set of best practice resources. These best practices include:

- Tools that lead to progress in the development of designs that reduce and eliminate the use of hazardous chemicals in the production of electrical and electronic products
- Business standards and practices for tracking and disclosing the presence of hazardous chemicals in the manufacturing, use and end-of-life stages of electrical and electronic products
- Tools and information on potential safer substitutes for chemicals of concern in electrical and electronic product applications
- Green purchasing strategies of businesses and Governments
- Extended producer responsibility policies of businesses and Governments
- Provisional strategies and actions in design and manufacturing that should be implemented until elimination is possible or safer substitutes are available

### **Global agreement that more work needs to be done on hazardous chemicals in the electronics lifecycle**

At the 4<sup>th</sup> International Conference on Chemicals Management (ICCM4) in 2015, more than 100 countries once again encouraged use of the Vienna recommendations along with several other key points:

- The International Labour Organization (ILO) was invited to activate itself on worker safety issues in production, waste management, and recycling.
- Advocacy, awareness, information, education, and communication about hazardous chemicals in the entire electronics supply chain for vulnerable groups and relevant stakeholders should begin by 2016.
- Original equipment manufacturers (OEMs) should develop and implement sustainable and effective electrical and electronic products take-back programs.
- OEMs should work with their supply chain to establish and implement industrial hygiene and environmental monitoring programs.
- OEMs should collect and provide health and safety information to workers on chemicals they are handling or exposed to in electrical and electronic products manufacturing.
- Procurement initiatives should be established that favor improved safety and sustainability profile of electrical and electronic products, including chemicals used in manufacturing.
- Synergize with SAICM's chemicals in products program to provide access to information on hazardous chemicals in the life cycle of electrical and electronic products.