

Labour Division and the Exposure to Air Pollution of Men and Women Working in the Craft Villages

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Abstract: Craft villages in Vietnam have created employment, making an important contribution to the economic development in rural areas. However, workers in craft villages face many risks arising from working in polluted environments, including air pollution. This article, based on qualitative data collected in some craft villages in Hanoi, reflects the exposure to air pollution associated with the labour division of men and women in craft villages, and its influences on the world of work of men and women. It is found that men often do more strenuous work and they are directly exposed to harmful emissions more than women. Nevertheless, women spend more time at craft production sites due to their less mobility compared to men, hence, the time that women are exposed to air pollution in the workplace appears to be more than that of men. Women also report more health problems relating to polluted air at the workplace. However, incomes of women in craft production facilities are lower than men's because the payment is usually based on the heavy nature of the work with little consideration of air pollution risks.

Keywords: Air pollution; Craft villages; Gender relation; Labour division.

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1. Introduction

Air pollution has negatively influenced people's health. It reduces life expectancy and increases human mortality (Arden Pope et al., 2009; Qian Di et al., 2017). Air pollution also affects the world of work of laborers. According to ILO (2018a), air pollution reduces labor supply and productivity by affecting workers' health. In addition, it reduces the working time and income of workers because they have to take care of dependents who are sick due to the impact of air pollution. In Viet Nam, air pollution is one of leading causes for illness and premature death (US Aid, Live & Learn, & University of Public Health, 2021). The World Air Pollution Report 2020 (GreenPeace, CREA, UNEP, & UN Habitat, 2020) indicates that although the air pollution situation in Viet Nam has improved compared to 2019, it is still a major threat to human health.

Although it is not possible to separate the effects of gender and sex, numerous studies on exposure to air pollution show that women and girls are more affected by air pollution than men and boys (see WHO, 2009). Biological differences between men and women (for example, size and growth of lungs, gas absorption, airway responsiveness, vascular response, etc.) affect how much they are exposed to air pollution (Clougherty, 2010). Some studies on the vulnerability to ambient air pollution with some specific pollutants such as PM_{2.5}, PM₁₀ and O₃ show that women are often more affected by ambient air pollution than men (Kan H et al., 2008). The study by Oliveira et al. (2011), which analyses the association between air pollution and mortality from respiratory diseases, considers different sensitivities by sex. It is found that the increased risk of death from PM₁₀ is higher in women than in men. Kim and Hu (1998) explains that the differences between women and men when exposing to air pollution arise from the structure of female respiratory organs which puts them at risk of respiratory problems, including respiratory problems are more associated with air pollution than in men. The study in China by Chen et al. (2017) on the influences of air pollution on human cognitive ability through verbal and math tests show that simultaneous and cumulative exposure to air pollution have more negative affect

on men than women, especially among elderly and less educated groups. Meanwhile, the majority of women are immune to the short-term effects of pollution on cognitive tests (Chen et al., 2017). The study by Kim et al. (2019) on the influence of sex differences on the association between the cognitive function of the elderly in Korea and exposure to air pollutants suggest that men had a higher risk for declining cognitive function associated with increased exposures to PM₁₀ and PM_{2.5-10} but the adverse effect of NO₂ exposure on cognitive function was greater in women than men. This could be explained by the differences in structural or nervous systems of men and women that affect their cognitive function related to exposure to different air pollutants. Oiamo and Luginaah (2013) analyzed the differences between men and women in baseline symptoms due to exposure to a mixture of ambient pollutants suggested that ambient pollution have more effect on women's health, and this may be explained by women's autoimmune disorders.

Besides biological differences, many studies reflect the influences of air pollution from gender lens. Gender, as a social construct, includes cultural norms, roles, and behaviors that are shaped by relations between women and men and between girls and boys. Gender influences the roles of women and men in performing daily activities. It therefore has shaped the ways that men and women are exposed to air pollution. The disparities in income and education between women and men are also the root causes of their exposure to air pollution (Clougherty, 2010). In many countries, traditional patterns of division of labor force women to spend a lot of time doing household chores. Due to gender role stereotypes, girls are expected to help cook more for the family and boys are expected to do chores outside the home. These make girls more exposed to household air pollution (Masamitsu et al., 2020). Retaining gender role stereotypes on the pattern of labor division detrimental to women and girls, as they are adversely affected by high exposure to household air pollution. On average, the amount of time that women spend in the kitchen tripled that of men, and women therefore are more exposed to sources of indoor

pollution (ILO, 2018b). The use of fossil fuels for cooking in many countries exposes women to many respiratory health problems (Clougherty, 2010). Especially, women in low-income countries are more exposed to indoor air pollution due to the use of solid fuels. The study by Pitt, Rosenzweig and Hassan (2005) examined the extent to which the division of household responsibilities, household structure, and the size and location of kitchen appliances impact the health of women and children. It shows that being close to the stove negatively affects the respiratory health of women and the children they care for (Masamitsu et al., 2020).

In recent year, air pollution-related issues have been concerned by many researchers in Viet Nam, but there is almost no study investigating air pollution from a gender perspective. Viet Nam has little data on the effects of air pollution disaggregated by gender, and gender issues also have not been integrated into air pollution policies. Therefore, there are few evidence-based research reflecting the influence of air pollution on the world of work of specific social groups. This article examines the labor division between men and women in craft villages in Hanoi and their exposure to air pollution. It bases on qualitative data of a research project: “Intersectional impacts of air pollution on the world of work of informal labor groups in craft villages in Hanoi, Viet Nam”, implemented by Institute of Human Studies and Institute of Human Geography in 2022 under a program funded by International Development Research Centre and Stockholm Environment Institute: “Air Pollution in the World of Work”. The research was conducted in three craft villages in Hanoi, including an incense production village (Phu Luong Thuong village, Quang Phu Cau commune, Ung Hoa district), a plastic recycling village (Xa Cau village, Quang Phu Cau commune, Ung Hoa district), and a lacquer production village (Ha Thai village, Duyen Thai commune, Thuong Tin district). The analysis in the article based on qualitative data of the project. It includes 4 focused group discussions (FGDs) at each craft village with young female workers, middle-aged female workers, young male worker, and middle-aged male workers (in total, 12 FGDs were conducted in the three villages); 24 in-depth interviews (IDIs) were conducted in the three villages

(4 IDIs with men workers and 4 IDIs with women workers at each villages). These twenty-four men and women also wrote work diaries in 10 working days, which recorded their schedule, activities and air pollution in the workplace, and their health problems.

2. The exposure to air pollution of men and women in craft villages

Women's work and their exposure to air pollution

Female workers in all the 3 craft villages often do light jobs that require less technical skills than male. Hence, they are less likely to be directly exposed to hazardous pollutants such as toxic chemicals than men. Nevertheless, women are still exposed to dust and odor emitted from the manufacturing process because they work inside the production facilities. The daily working hours of women and men are generally the same (about 8-9 hours), but women spend more time inside craft production workshop. Due to being able to drive trucks and load items, men also transport and deliver goods which provides them with opportunities to work outside production facilities. Therefore, men have less time exposed to air pollution in the workplace than women. The work diary of a young man (26 years old, working at a plastic recycling facility) shows that there are days when he only works half the time at the workshop and spends half of his working time transporting plastic from the place of purchase to the production facility. One woman (IDI, 49 years old, plastic recycling worker) said:

“I mainly do plastic-related jobs at home, and my husband goes out to do transactions, sometimes he stays at home to help me. He is better at negotiating deals, so he goes out to talk with customers. He also drives better and is stronger than me, so he is responsible for moving the products. Therefore, such division of labor is natural” (IDI, 49 years old, plastic recycling worker).

In the lacquer production village: Women do simpler but meticulous jobs such as creating base, smoothing, gluing and decorating whereas men often do heavy jobs such as spray-painting, transporting products, or operating machinery, etc.

One woman (IDI, 41 years old, worker at a lacquer establishment) said that she often involves in silver-gilding and finishing stages because these stages need meticulousness, carefulness, and the sense of responsibility to ensure the products' finesse. Men rarely do jobs that require patience and meticulousness like women.

In the work diary of a young woman (29 years old, working at a lacquer factory), she complains about the smell of paint in her workplace. Although she mainly does gold and silver-gilding, she is still exposed to the smell of paint from various stations at the workshop. She also writes about how almost every day she has to endure dust from the street, the dust of industrial gold and silver paste, fine dust from the carpentry station, and the smell of paint, oil, and gasoline in her workshop as well as from nearby production facilities. Maybe that is why she notes that she often has a runny nose, feels tired, and sometimes has to pause work for a while before continuing. In the in-depth interview, she shared more about her asthma due to working for a long time in lacquer production. Although the doctor repeatedly advised her to change job to improve her health, she could not find another job. Even when she is not feeling well, she still tries to work: "I still have to work, no way I can't take a break, I have to take medicine for asthma every day. But when it's cold, I almost can't breathe and have to take a day off". She said that at the factory, there are strong smells a lot of gasoline, plastic and oil, so many people have asthma and sinus problems, but everyone still have to do their job. When working here, she not only had to endure the odor in the factory where she works but also from nearby production facilities: "I am allergic to the smell of gasoline. Although we don't use it at the place I work, nearby workshops use it, so I still have to inhale it".

The work diary of another woman (36 years old, a worker at a lacquer establishment) describes that workers where she works often complain to each other about the smell of paint from nearby establishments: "Today people complained about the smell of paint next door. They wonder which place uses the paint that has such strong smell". In addition to the exposure to paint smell,

she is exposed to a lot of dust from the process of making gold and silver-gilded decorations. In her job, she mainly works with gold leaves, native paint, litmus and blended oil and they release a lot of dust and odors. In her diary, she wrote that how there were days when she felt uncomfortable, so she had to get up and rinse her mouth with salt water.

In the plastic recycle village: Women do much of the initial stage of sorting plastic waste, which makes women exposed to the polluted odors emitted from plastic waste. In a woman's work diary (30 years old, a worker at a plastic recycling establishment), she is more exposed to pollution when she works with dirty and wet plastic waste: “Sometimes I accidentally inhale ink released from the waste, it makes my nose turn black even though I wear a facemask. I am exposed to a lot of unpleasant smells like ink smell, plastic smell and the smell of food containers”.

In the process of plastic sorting, sometimes plastic items are soaked in salt water to separate submerged and floating plastics. According to a woman's work diary (43 years old, working at a plastic recycling establishment), the water in the tank used for sorting plastic is rarely changed (about once a month), only salt is added for each use, so it is very dirty and has an unpleasant smell. Therefore, when picking up the floating plastic, she felt very uncomfortable because of the odor emitted from the dirty water.

In the incense production village: Women do jobs such as sorting and picking incense stick, which are lighter jobs than men. There is also often less dust in these jobs compared to chopping stick or mixing ingredients. Women do light jobs which do not require a lot of techniques and the use of machines, so their wages are often lower than that of men. A young man shared about the rationale in division of work for women:

“Women still have to do housework, give birth and raise children so they should be given more priority, they should be allowed do light, moderate work and work in a non-toxic, non-polluting environment that does not affect their health. The jobs of picking and blowing incense stick like here are suitable for women

because it's not too heavy" (IDI, 29 years old, male, a worker at an incense production workshop).

Although women do not often do jobs that involve machines and heavy jobs like splitting and scrubbing incense stick, their jobs share the same workplace with other jobs. As a result, both women and men are affected by air pollution in the workplace. In the work diary of a woman (45 years old, working at an incense stick factory), almost every day she mentioned the dust of bamboo emitted from the machines was everywhere inside the workshop. Besides, there was the stench of water-soaked bamboo and the smell of engine oil that forced her to cover her nose and mouth.

Men's work and their exposure to air pollution

Due to their physical strength, men often do more strenuous work or do tasks involving machines (e.g., carpentry, wood splintering, plastic crushing, etc.), which make them directly exposed to harmful emissions more than women.

In lacquer production, the most hazardous work is spraying paint, especially to gloss the product at the final stage. Spray painting process uses PU paint, synthetic paint, oil, and gasoline. Workshops usually spray paint a few times a week and each time is about 2-4 hours. When spraying paint, male workers are in close contact with the toxic paint (about 40cm away) and women working outside are about 50m away from the spraying room. A woman found that the jobs in the village are divided properly:

"Stronger men do harder and more hazardous work. Men are often exposed to toxic paint (using sprayers), wood dust more than women. Such assignment ensures women's health. This division of work is made by the employer. I think that's appropriate, so there's no complaint" (FGD, female, 37 years old, worker at a lacquer factory).

Most paint sprayers in production facilities are men, women rarely do this job because it is considered to affect women's fertility. Other interview provides a clearer reflection on the risks of exposure to air pollution of men when doing paint spraying jobs:

“Men are responsible for spray painting, polishing, glossing, etc., they use machines and also come into direct contact with harmful chemicals more than women. Spraying is the most tiring work because I have to use a spray gun, the spray room is quite small, and the smell of paint is strong. Many days when I’m tired from spraying, I would take a break for a few minutes and then resume to work” (FGD, male, 29 years old, working in lacquer production).

Similar to women, men also have to inhale the smell of paint from their own workplace as well as adjacent facilities. The work diary of a man (30 years old, worker at a lacquer production factory) shows that almost every day he feels uncomfortable because he had to inhale wood dust, paint smell and chemical additives in production facilities. He wrote:

“The air today is dusty, every time I work, my sinusitis recurs, and the air is uncomfortable and stifling”; “Today the lacquer factories next door did spray painting. When they sprayed the paint, the air reeked of a strong paint smell” (Diary, 30 years old, worker at a lacquer production factory).

In the plastic recycling village, men's jobs also require more physical strength. Men who are healthy and know how to use machines (such as drilling machines) are in charge of cutting waste to separate plastic and metal, transporting plastic products, and operating a plastic grinder. Men also do delivery, so the time that men work inside the workshop is usually less than that of women. A worker wrote in his work diary that normally he feels fine. But in days that he did plastic grinding (1-2 times/week, 2-4 hours each time), he is more exposed to odors and felt more tired. He wrote:

“Today when I was grinding, the friction in the machine caused heat, and it had the smell of plastic, dust, mixed with all kinds of things, etc. I didn't feel anything when I worked, but when I got home, my hands and chest hurt” (Diary, 34 years old, worker at a plastic factory).

In incense craft village, men perform jobs that involve machinery and require a lot of physical strength such as operating stick splitters, stick scrubber, stick cutters, and dyeing machines. Besides operating the machines, they also have to bundle incense sticks, load and transport the bundles to the warehouse. In the

incense making factory, men are in charge of mixing ingredients and packing. These are the jobs that have the most direct exposure to dust impurities in the production process.

“Women can't do dyeing, only men with good health can do it. You have to hold bundles of 3-4kg incense sticks and dip them in a pot of coloring, and then you have to turn them over and over. The work is heavy, and the air is hot, so you have to be strong to do it” (IDI, male, 45 years old, a worker at an incense making workshop).

In the diaries of many male workers of incense making facilities, they mentioned the dusty condition caused by the wood splitting and peeling machine. A man (Diary, 37 years old, working at an incense sticks factory) whose main job is to run a peeling machine (putting logs into the machine to split them into sticks causes a lot of dust). Almost every day, his work diary mentions the dusty situation in the production facility (There is a lot of dust in the corners of his eyes, hands and nostrils). He also wrote about people who work with him in the same facility complaining to each other about dust and mulch from the splitting machine.

Gender role ideology tend to influence the choice of work of men and women in craft village. Despite of being aware of the risks of working in polluted environment, many women decide to work in craft villages to have time flexibility to take care of the family. This is consistent with the report Country Gender Equality Profile - Viet Nam 2021 indicating that flexibility in working conditions to accommodate care responsibilities rates highly for women in Viet Nam (Australia Aid, ADB, ILO, & Women, 2021). Some women in our research shared about the flexibility of their working hours, enabling them to be proactive in taking time to take care of their family:

“Most of us here work in plastic production because we can earn some income and be proactive in daily schedule, women here do this a lot because besides working, they also have to do housework and taking care of the children, working in plastic production, it is easier for us to stop working

when necessary than working for a company” (FGD, female, 45 years old, plastic worker).

In fact, there are women who had other jobs but switched to work in production facilities in craft villages to have time to take care of their families. For example, one woman (FGD, 36 years old, worker at a lacquer production factory) said that she used to work as a garment worker in the past. That job helped her earn more money because she worked as a workshop manager, and it was also less hazardous than lacquer production. However, because the working hours at the garment company were tight and she needed time to take care of her children, she quit the job and switched to lacquer production. On the other hand, men’s jobs make them exposed to a lot of air pollution but they give them higher income than that of women. The tradition view that considers men as the breadwinner of the family also sometimes puts pressure on men, so they have to seek for high-paying jobs. One young man shared:

“Male is often considered the breadwinner of the family, so doing jobs that generate high income will give you more confidence. Here women can't do stick cutting, only men and young people can do it. The operator of the cutting machine must control the breaker, manage electricity, and operate the machine quickly and accurately to ensure the quality of the product” (IDI, 29 years old, worker at an incense making workshop).

This is not only men’s viewpoint but also women. Many women working in craft villages also have the idea that the husband is the one that brings the main source of income while the wife’s income is not as important because they have to take care of the family. Tradition view of men’s role might encourage men to accept to do the work with higher risk of being exposed to air pollution but provide them with better income. This is not only men’s viewpoint but also women. Many women working in craft villages also have the idea that the husband is the one that brings the main source of income while the wife’s income is not as important because they have to take care of the family. One woman (IDI, 29 years old, worker in a plastic recycling facility) said that she made 170 thousand VND a day and only got paid for the days she works. Her income is only enough

for her children to go to school, so she mainly depends on her husband: “I have to look after two kids, so it doesn’t matter how much I earn, my husband takes care of the rest of our financial needs”.

In sum, the division of labor in the production facilities of craft villages is quite flexible and depends on job segments. There are jobs that are done separately by men and women, but there are jobs that are done by both genders working together. Because a lot of jobs in craft villages require physical strength, in general, women often do light jobs that require patience and meticulousness, while men do jobs that are heavier and involve more mobility. This division of labor causes difference in the exposure to air pollution between women and: Women have more time exposed to air pollution at workplaces than men due to women’s less mobility at work. However, men do heavy work more often and their work generates more pollutants because they are the operators of machines at craft production workshops.

3. Effect of air pollution on women and men working in craft villages

When discussing about health, men are less likely to mention their health problems than women. Although men, especially men working in lacquer production, are directly exposed to harmful emissions, they are less likely to talk about their health problems. This can be explained as men's physical condition is better than that of women, in addition, men pay less attention to their health problems. IDIs and FGDs with male workers show that most of them believe that they do not have health problems and they think that they are used to dust, odors and chemicals, so they do not see any problems:

“I’ve gotten used to it, I don’t smell the paint, I don’t see any health problems”
(FGD, Male, 40 years old, a worker in lacquer production).

It appears that women are affected by air pollution more than men. Even in the same factory where both men and women are affected by from dust and paint fumes, only women think that air pollution in the workplace affects their health:

“I often have a cough. My two nostrils blackened by dust after work. On days that I spray paint, I always have a sore throat. The paint sprayers are men, they are very strong, so they see no problems. Women are always weaker” (FGD, female, 37 years old, worker in a lacquer establishment).

Women report more health impacts related to air pollution in the workplace than men. One woman said that she once fainted at work and had to take 7-8 days off work. She shared:

“The doctor forced me to be hospitalized, but I didn’t do it because I have to take care of my kids. Hospital and medicine bills are very expensive, so now every time I have a health problem, I have to go to the doctor right away, now I have to go to the doctor every month to get medicine. At first, I only had common rhinitis, but it gradually turned into asthma. If I have stopped doing this job when I had rhinitis, I would haven’t had asthma, but I didn’t have another choice. Doing this job, I inhale a lot of dust and it causes allergic” (IDI, female, 29 years old, worker in lacquer production).

Women also are more likely to use measures to protect themselves from air pollution than men. This can be explained by the fact that, men have less health problems than women, and also because their tolerance to air pollution is stronger than women.

“Men often don't wear masks or hats, some wear gloves, some don't” (FGD, Female, 32 years old, worker in a plastic recycling establishment).

“I don’t want to wear a mask because it's hot and it's hard to breathe, usually I only wear it when I do grind, but when I pack the goods or chop plastic, I don't wear it” (FGD, Male, 40 years old, worker at a plastic recycling establishment).

Observations at production facilities in craft villages show that men, even men who take on jobs with a lot of smoke and dust, are less likely to wear masks than women. And according to them, it is because they still can handle air pollution here even though they work at the same place as women. It could be that men are assumed healthier so they do not care about protective measurement as much as women do.

Air pollution has greater impact on women's working time and income than that of men due to the differences in health condition and the jobs they take. In general, the jobs of men are more physically demanding and therefore they receive higher wages. Men usually paid by the day (or sometime by the month) due to the nature of work that men undertake. Hence, their income is not much influenced when they feel tired:

“Men do heavy jobs, like loading and unloading items, and get paid by the day. Their daily wage is 200,000 VND. If I'm too tired, it's okay to take a short break. The employer doesn't complain” (FGD, Male, 47 years old, worker in an incense making establishment).

Nevertheless, women often do job that pays by day or by product. Therefore, even if they do not take a break, but they are tired, their productivity will decrease and therefore their income will also be lower.

“Women here often do the job of scrubbing and sorting sticks, so the salary is calculated by product. At the end of the day, we weigh the number of products we make and then calculate the wage, so when we do less, we make less money, and when we do more, we make more money. On average, I make 200,000 VND per day, if I work less every day, I only get 150,000 VND” (FGD, Female, 40 years old, worker in an incense making establishment).

Wages in craft villages take into account the level of difficulty and toxicity of each job. Accordingly, people who do jobs that are more exposed to air pollutants from operating machines (e.g., pain praying machine in lacquer craft villages, splitting machines in incense craft villages, plastic grinding machines in plastic waste recycle village) will receive higher wages than other workers. These jobs are often performed by men and are paid more. However, the reality is that jobs in craft villages are mostly done in the same workshop, and both men and women are affected by air pollution directly or indirectly. In fact, all jobs in many establishments in craft villages are usually carried out in the same place, so every worker is exposed to air pollution. There are not many facilities that advanced and effective odor and dust treatment systems. According to one man (FGD, 46 years old, worker at a

lacquer production factory), in his workshop both men and women, and all age groups are equally exposed to dust pollution and paint smell because they work at the same place. Meanwhile, only a few people are entitled to toxic allowances for their exposure to air pollution.

“In general, everyone in this workshop suffers from dust. There is also dust from making base, chiseling workers like us also suffer from dust, those who run sawing and chiseling machines are exposed to dust the most. The women who do silver gluing also have to endure dust from those gold and silver leaves. The salary is better for us as chisel workers, it's because our work is more difficult, but also because the employer said our job is dusty, but staying at the same workshop, like I said, everyone suffers from dust” (FGD, Male, 29 years old, worker in a lacquer establishment).

“Base makers like us do not have the same wage as people who do spray painting and drawing. The paint is toxic, so the salary is higher, but we work at the same workshop so we also have to smell the paint because it spreads in the air, we are indirectly affected by the paint” (FGD, Female, 37 years old, worker in a lacquer establishment).

Although men are directly exposed to emissions, the time they are exposed to air pollution in the workplace is less than that of women because do not stay in one place but and often move around outside the workshop. Meanwhile, women's working time in the air polluted environment is more than that of men, but their income is lower, and they do not have toxic allowance. This reflects inequality in labour division, income and exposure to air pollution between men and women in craft villages.

4. Conclusion

Gender and sex are associated with the division of labor and the jobs that workers undertake; therefore, it affects the exposure to air pollution of workers in craft village production facilities. Women usually do lighter jobs than that of men but their jobs require more attention, carefulness and meticulousness due to their patience. Meanwhile, men often do jobs that require more physical strength, and

in many cases, they participate more in hazardous working stages of work in more air polluted environments (in particular, operating machines in craft village production facilities). However, men have more mobility in work than women so they spend less time in production facilities than women. Due to this, the amount of time that men exposure to air pollution in production facilities may be less than that of women.

The exposure to air pollution also depends on the nature of work that men and women undertake. Air pollution at lacquer production facilities is mainly due to dust (emitted mainly from carpentry processes, product grinding, gold and silver gilding) and toxic substances from the use of paint, especially in the spray-painting process. Because they work in the same workshop, all workers are at risk of inhaling dust and paint fumes. However, due to the peculiarities of the division of work, women are more exposed to gold and silver dust from gilding jobs while men, especially young men, have more contact with the toxicity caused by participating in the spray-painting process. In plastic recycling, air pollution mainly comes from the smell of waste; pollutants and microplastics from plastic waste and the incineration of plastic waste; dust emitted from the collection, transportation and sorting of plastic waste. All workers are exposed to these pollutants at the production site, but women often spend more time working at the production facilities than men so the time women are exposed to air pollution at the production site may be longer than men. However, men are usually the ones who operate the plastic crusher. In this process, men are at greater risk of being exposed to pollutants generated from the plastic crushing process. Air pollution from incense stick production mainly comes from dust caused by splitting, peeling, cutting and scrubbing machines. In addition, the process of dyeing incense also affects the quality of air. Although dust pollution occurs in the entire workshop, but because men are the operators of the peeling, splitting, cutting and scrubbing machines which generate a lot of dust, they are much more exposed to pollution than women.

Air pollution influences health and working time of laborers, and therefore, it affects their incomes. The impact of air pollution on working time and income

is greater in women than in men due to their physical condition difference and the job position they take. Women report more health problems related to air pollution in the workplace than men. Men have less report on their health problems because they do not pay much attention to their health and they seem not to feel sick due to air pollution at workplace. In addition, the fact that men are considered the backbone of the family might make them afraid to show they are sick due to work for earn a living.

Wages for women in craft production facilities are often lower than men's because employers' payment is based solely on the heavy nature of the work, with little consideration of the potential effects of air pollution at workplace on men and women workers. Although the time that women are exposed to polluted air at workplace is more than that of men, there are only a few jobs that are considered hazardous and earn extra wages, which are often done by men. While the fact is that all jobs are often performed in the same place, and women even spend more time at production facilities due to their less mobility compared to men.

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