Journal of Safety Education
Volume 2 Issue 1 Year 2024 Pages 20-27

P-ISSN 2986-6391 | E-ISSN 2988-3504
https://journal.unnes.ac.id/sju/index.php/jse

PPE Education to Reduce the Risk of Workplace Accidents in The Furniture Industry

Alya Sofia Zahra[1], Athiyyah Qurrotu'ain Hasibuan[1], Aza Putri Anisa[1], Farhan Dani Amrullah[1], Fitra Aulia Rahma[1], Nisrina Nur Fathiyah[2], Nurul Annisa[2], Putri Rachmawati[3]

[1]*Department Public Health Science, Faculty of Medicine, Universitas Negeri Semarang, Indonesia*
[2]*Faculty of Sports and Health Sciences, Universitas Negeri Makassar, Indonesia*
[3]*International Relations, Bandırma Onyedi Eylül Üniversitesi, Türkiye*

*****Correspondence to: *fitraauliarhm25@students.unnes.ac.id*

Abstract: Occupational safety and health is an important aspect in the industrial world, including the furniture industry. If a company implements the Occupational Health and Safety well, it can reduce the risk of work accidents, thereby increasing work productivity. Work accidents can occur due to workers' negligence or suboptimal implementation of the Occupational Health and Safety System. To reduce the risk of work accidents, a risk analysis is carried out, which is one part of risk management. One of the risk analyses that can be done is by using the *Failure Mode and Effect Analysis* (FMEA) method. Risk identification in the furniture industry is based on field reviews, which then assess the severity (*S*), occurrence rate (*O*), and detection level (*D*). Then the assessment results are sorted to determine the highest *Risk Priority Number* (RPN) value variable. In the furniture production process, there are various potential hazards, with the highest RPN found in the cutting process, where a machine incident occurred with an RPN value of 120. *The severity* factor is given a value of 6 because the error leads to torn injuries and equipment damage, so it must be handled immediately, and there is the repair of the damage. One effort to reduce the risk of work accidents is to provide PPE at work.

Keywords: Furniture, FMEA, Hazard, PPE, Risk

INTRODUCTION

In recent years, the Indonesian furniture industry has experienced very rapid growth that has a significant impact on technological developments. Furniture making is the process of converting raw wood materials or semi-finished materials into goods that have the added value to benefit the sales of these products (Manampiring, 2015). However, the technology used in such industries poses a risk to workers' safety. Work accidents have three important components, namely unexpected events, material and non-material impacts, and disrupted work processes. This occurs due to the lack of occupational safety and health management (Indrawati et al., 2018).

The most important aspect in the industrial world is not only the final product, but also in terms of occupational safety and health (OSH) (Jaafar et al., 2018). Occupational Safety and Health (OSH) is an activity to ensure the realization of a safe and comfortable work environment and avoid physical or psychological disorders (Ramadan et al., 2021). If the implementation of occupational safety and health (OSH) in a company goes well, it can reduce the risk of work accidents so that it can increase productivity, and financial expenses can also be minimized (Jaafar et al., 2018).

Data from the International Labour Organization in 2018 states that as many as 2.78 million workers die each year due to work accidents and occupational diseases. About 86.3%, or as many as 2.4 million of them, died due to occupational diseases, and more than 380,000, or about 13.7% died due to work accidents. There are more than 160 million workers are sick due to workplace hazards and more than 250 million workers have workplace accidents (Laksamana Caesar et al., 2023). Data from the International Labour Organization ILO in 2018 also shows that there is a record of around 6,000 fatal work accidents occurring worldwide every day (Ito et al., 2023).

Risk management, including hazard identification, risk assessment, and work risk management, is necessary for the implementation of an occupational safety and health system in an industry. Hazards, which are potential adverse events for humans, processes, and the environment around the industry, must be considered carefully and accurately because they relate to machinery, work tools, nature of work, and production processes. In the production process, there is a significant potential hazard that can cause work accidents in the workplace and work environment. Therefore, evaluation is needed to minimize potential hazards and risks that arise along with the production process.

Hazard and risk measurements can be done by choosing methods related to industry characteristics (Indrawati et al., 2018).

This research was conducted in one of the furniture industries in Semarang. Furniture making is the process of changing raw wood materials or semi-finished materials into goods that have the added value to obtain profits from the sale of these goods (Manampiring, 2015). The products produced in this industry are various household furniture such as tables, chairs, cupboards, doors, etc. In its production, this furniture utilizes wood materials that have previously been used, which are then reprocessed into goods that are ready to be sold.

Broadly speaking, the production process carried out in furniture begins at the stage of receiving goods (lifting), followed by the stages of cutting materials, assembling, sanding, and finally finishing. At each stage of production, there are various potential hazards, namely being hit by wood, milking, winding, electric shock, injury due to the use of tools, noise hazards, and hazards due to exposure to chemicals in the paint or thinner used at the finishing stage. With these various potential hazards, it is necessary to identify occupational safety and health (OSH) to find out what must be provided as an effort to support the safety and health of workers when doing their work to reduce the risk of work accidents, namely by using the Failure Mode and Effect Analysis (FMEA) method. Failure Mode and Effect Analysis (FMEA) is a method used to identify, assess risks, and determine the priority of risks that must be addressed(V. Hendro & Ayudyah. Eka Apsari, 2023). Research conducted using the FMEA method aims to determine the value of RPN (Risk Priority Number) in the furniture production process.

METHODS

This research is descriptive research conducted in one of the furniture industries in Semarang. Data collection in this study was carried out by observation method and interviews with six workers in each furniture production process. The analysis of potential hazards in the furniture industry was conducted using the *Failure Modes and Effects Analysis* (FMEA) method. FMEA is an investigative procedure or method used to identify possible failures of systems, designs, and processes, and analyse the impact of failure modes (Passarella, 2018). In general, there are three types of FMEA, namely concept FMEA, design FMEA, and process FMEA. Concept FMEA is the analysis of concepts in the early stages of product or process development (at the system and subsystem level), focusing on the potential failure modes that may occur in the proposed concept. Design FMEA is an identification that focuses on preventing product design failures. Meanwhile, the process FMEA focuses on potential failures in product manufacturing activities (Sharma & Srivastava, 2018). The analysis of potential hazards carried out in this furniture company used the FMEA process to identify failures that can result in work accidents during the production process (Rama & Bhaskara, 2022).

Risk assessment in this FMEA method uses the *Risk Priority Number* (RPN) to determine the priority of failure modes. This RPN is a result of the severity of the event (S), detection (D), and probability of occurrence (O). In determining the severity of the event (S), the seriousness of the damage caused by the failure of the production process is assessed. The probability of damage (O) is evaluated by how likely a disturbance can cause failure. Meanwhile, the detection level (D) can be determined by how the failure can occur based on the control ability carried out (Punuhsingon, n.d.). After an assessment using a scale table, the RPN calculation is carried out, and the priority level of a failure mode obtained from the analysis can be indicated through this RPN. if the RPN value is higher, then the priority order of improvement is also higher (Widianti, 2016).

RESULT AND DISCUSSION

According to Suherman & Cahyana (2019), assessing the severity of events (S), detection (D), and probability of occurrence (O), can be conducted by using scales to determine the level of risk. The severity of the event (S) is categorized into five levels: a scale of 1-2 (very low) indicating no financial effects and losses, a scale of 3-4 (low) indicating minor injuries and small amounts of financial losses, a scale of 5-6 (medium) indicating moderate injuries that require medical treatment and financial losses in small amounts, a scale of 7-8 (high) indicating severe injuries >1 people who cause significant losses and disturbances in production, and scale 9-10 (very high) means experiencing fatal injuries >1 people which causes extensive losses and halting the production process. Detection (D) is divided into six levels: a scale of 1 means the potential cause of the accident can always be detected, a scale of 2-3 means indicating a very high chance of detecting the potential cause of the accident, a scale of 4-5 means a medium chance of potential detection, a scale of 6-7 means a slight chance of detection, a scale of 8-9 means ability to recognize the form and cause of errors is low and a scale of 10 means there is no control or chance of detection that can detect the form and cause of failure. Meanwhile, on the probability of events (O), there are five levels: a scale of 1-2 means the potential for accidents rarely occurs, a scale of 3-4 means the potential for accidents rarely occurs, a scale of 5-6 means the potential for accidents occurs occasionally, a scale of 7-8 means there are repeated events, and a scale of 9-10 means the potential for accidents occurs frequently.

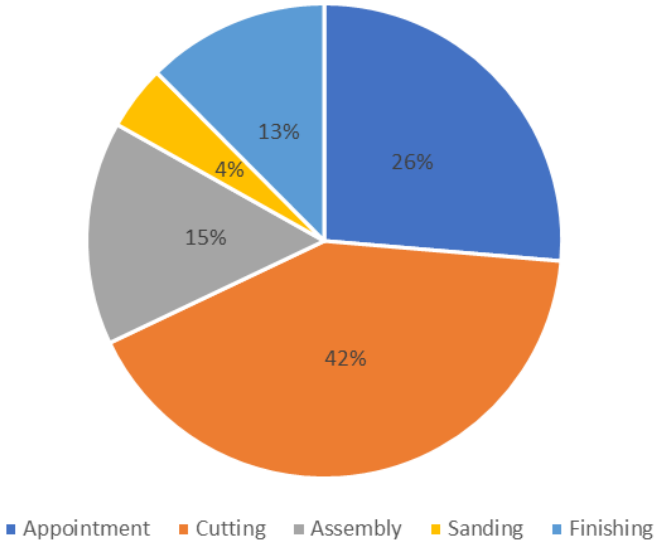

Figure 1. Potential Hazard Diagram

Based on Table 4,the result of analysis using the FMEA method, the percentage of potential hazards in each process is displayed in the form of a pie chart as in Figure 1. It is known that the hazard risk assessment of lifting, cutting, assembly, sanding, and finishing processes has different percentage values. The percentage of risk assessment for the lifting process is 13%, cutting is 42%, assembly is 15%, sanding is 4%, and the finishing process is 26%. Thus, it can be known that the cutting process has the greatest potential danger among other processes.

The results of risk identification in Furniture using the FMEA method contained a total of 14 potential hazards in the production process of RPN results with a scale of around 16-120. In the lifting process, there is a potential danger of workers being hit by nails with RPN 72, feet being hit by wood with RPN 80, and hands being hit by wood chips with RPN 28. In the cutting process, the potential danger of being hit by a saw obtained RPN 120 because it can cause cut wounds, hearing loss due to noise from machines with RPN 96, wood dust that causes eye irritation and respiratory problems with RPN 28 and 16 respectively, and electric shock due to unsafe wiring with RPN 24. In the assembly process, the potential danger is the milking of wood chips with RPN 28, the finger being hit by a hammer with RPN 36 and stumbling due to limited space with RPN 40. The sanding process has the potential to cause hazards as workers can be scratched by the sandpaper, obtaining an RPN of 30. While in the finishing process, potential hazards come from chemicals, such as skin irritation and respiratory disorders, with RPNs of 45 and 40, respectively. It is known that the highest potential failure is found in the cutting process, namely the danger of being hit by a saw machine. It has an RPN of 120, with a severity value of 6, because it can cause injuries that require medical treatment where it must be treated immediately. The company will experience financial losses because one of the production processes will be temporarily stopped due to injured workers. This danger can occur because workers do not use PPE due to some workers feeling uncomfortable using PPE while working, and the unavailability of PPE, as well as untidy space arrangement. According to the results of research conducted by Were & Ssennyonjo (2021), the main reason workers do not wear PPE is because workers feel uncomfortable wearing PPE while working, such as workers in the wood milling section find it challenging to do their jobs while wearing gloves.

Recommendations for controlling those potential hazards are by providing education and personal protective equipment (PPE) in accordance with work safety, implementing work instructions, and checking spatial planning regularly. The most likely control is to conduct occupational safety and health education on the importance of wearing personal protective equipment (PPE) while working. Occupational safety and health education provides the community with knowledge, skills, and understanding to stay safe under certain conditions (Mubita et al., 2021). Occupational safety and health education aims to increase workers' knowledge, where the level of understanding can influence the occurrence of work accidents. It can be said that the higher the workers' knowledge regarding occupational safety and health, the lower the incidence of work accidents will be(Mahfirah & Suhardi, 2021). Education is carried out using videos with the theme "Safe Furniture Industry with Orderly PPE". In the video, there

is an explanation of the potential hazards in each production process in a furniture company, along with personal protective equipment that must be used by workers.

Based on PER.08/3MEN/VII/2010 article 2, it is explained that employers must provide personal protective equipment for workers at work. In Law No. 1 of 1970, article 14C, it is stated that every company is required to provide free personal protective equipment required to workers under its leadership, and in article 12, workers must wear required personal protective equipment (Yasa, 2021). Personal protective equipment is a tool used to reduce exposure to hazards, including eye and face protection, hearing protection, safety gloves, head protection, and safety shoes (Sehsah et al., 2020).

In industrial workplaces, hazards may arise simultaneously on the top of the head and eyes. Therefore, workers must wear protective helmets and spectacles (Baszczyński, 2018). Glasses, known as spectacles, are used to reduce dazzling brightness and protect the eyes from dangers such as dust, microscopic particles, and sharp objects (Husna et al., 2019). Providing safety helmets are the most effective measure or step to prevent workers from getting head injuries (Bottlang et al., 2022). The protective helmet meets the requirements of Standard No. EN 397:2012+A1:2012, functioning to protect the user's head against the impact of falling objects or hitting the head of hazardous elements in the workplace (Baszczyński, 2018).

To protect furniture workers from potential noise hazards, providing personal protective equipment (PPE) is the most effective way to prevent Noise-Induced Hearing Loss (NIHL). The recommended PPE for workers to wear is earplugs. This PPE aims to reduce the volume of sound entering the eardrum. According to the National Institute for Occupational Safety and Health (NIOSH), when performing work with the risk of exposure to noise equal to or above 85 dBA during an eight-hour workday, workers must wear hearing protection. Meanwhile, companies are required to provide free hearing protection for their workers (Nurrokhmawati1 et al., 2022)

In the production process, workers are potentially exposed to dust and chemicals in the finishing process. Therefore, using masks is not enough to protect workers from exposure to chemicals contained in paint, which can affect workers' safety and health (Ratnasingam et al., 2010). Personal protective equipment in the form of a respirator prevents harmful particles such as gases, vapours, and dust from entering the worker's respiratory system. Therefore, respirators can be used as personal protective equipment to prevent workers from inhaling harmful particulates (Sunaryo, 2020)

In the production process, workers use tools in the form of machines with sharp blades and move so that workers' hands are at risk of being cut, slashed, or electrocuted. In addition to the use of machines, hands are at risk of stab injuries, scratches, and abrasions from objects in the work environment. Therefore, it is important to use gloves that can protect hands from the risk of injury as physical protection between dangers and skin (Ertekin &; Ertekin, 2020).

In the furniture production process, especially during the finishing process, workers usually use materials such as wood filler, wood stain, sanding sealer, and topcoat, which contain irritant chemicals. Irritants can cause skin diseases such as contact dermatitis (Thetkathuek et al., 2021). Therefore, workers are recommended to use hand-protective equipment that helps reduce exposure to chemicals on the skin (Kumar, 2010). Rubber gloves can be utilized as hand protective equipment to prevent chemical contact (Husna et al., 2019).

Workers are at risk of slipping and hitting their feet with nails or being crushed by wood or objects used in the production process. To protect workers from these various hazards, workers need to use safety shoes (Arimbi et al., 2019). Safety shoes should provide protection against impact and compression, and the metatarsal cover can be used to protect the foot from falling objects (Irzmańska, 2014).

With so many potential hazards in the furniture production process, workers must provide and use Personal Protective Equipment (PPE) Therefore, it is hoped that education related to PPE can be carried out in every furniture industry. This aims to increase the awareness of workers or company owners of the importance of using PPE to minimize the occurrence of work accidents or occupational diseases.

CONCLUSION

It is important to identify occupational safety and health to reduce the risk of work accidents. This identification can be done using the FMEA (Failure Mode and Effect Analysis) method. FMEA is a process or investigative approach that test the effects of failure modes and detect potential problems of systems, designs, and processes. The analysis of potential hazards in this furniture company uses the FMEA process, which focuses on potential failures in product manufacturing activities. The furniture production process has various potential hazards.

According to the findings of the Failure Mode Effect Analysis (FMEA) analysis, the cutting process is one of the production stages with the highest risk of harm. This is because the cutting process causes serious injuries that require medical help and causes financial losses due to production process constraints. The work accident occurred because workers did not wear PPE due to the unavailability of the furniture company. Recommendations for controlling potential hazards are by providing education and PPE in accordance with work safety, implementing work instructions, and checking spatial planning regularly. The most likely control is to conduct occupational safety and health education on the importance of wearing PPE while working. With this education, it is expected to minimize work accidents.

REFERENCES

Baszczyński, K. (2018). Effects of falling weight impact on industrial safety helmets used in conjunction with eye and face protection devices. *International Journal of Occupational Safety and Ergonomics*, *24*(2), 171–180. https://doi.org/10.1080/10803548.2017.1373987

Bottlang, M., DiGiacomo, G., Tsai, S., & Madey, S. (2022). Effect of helmet design on impact performance of industrial safety helmets. *Heliyon*, *8*(8), e09962. https://doi.org/10.1016/j.heliyon.2022.e09962

Husna, I., Handoko, W., Sarifudin, & Wijinurhayati, A. (2019). *Effectiveness of the Use of Personal Protective Equipment (Ppe) by Cadet on Board*. *186*(Apte 2018). https://doi.org/10.2991/apte-18.2019.31

Indrawati, S., Prabaswari, A. D., & Fitriyanto, M. A. (2018). Risk control analysis of a furniture production activities using hazard identification and risk assessment method. *MATEC Web of Conferences*, *154*, 2–5. https://doi.org/10.1051/matecconf/201815401102

Ito, Y. R., Silaban, G., & Mahyuni, E. L. (2023). Occupational Accidents on Transport Workers. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *8*(1), 433–436. https://doi.org/10.30604/jika.v8i1.1650

Jaafar, M. H., Arifin, K., Aiyub, K., Razman, M. R., Ishak, M. I. S., & Samsurijan, M. S. (2018). Occupational safety and health management in the construction industry: a review. *International Journal of Occupational Safety and Ergonomics*, *24*(4), 493–506. https://doi.org/10.1080/10803548.2017.1366129

Laksamana Caesar, D., Sholikhah, F., & Husni Mubaroq, M. (2023). Analisis Potensi dan Penilaian Risiko Bahaya Lingkungan Kerja di Perusahaan Furniture Jepara. *Environmental Occupational Health and Safety Journal • , 3*(2), 103.

Mahfirah, R., & Suhardi, B. (2021). Correlation Overview between Knowledge and Attitudes towards Occupational Safety and Health (K3) with Occupational Accidents. *Asian Journal of Social Science and Management Technology*, *3*(4), 11–16.

Manampiring, R. R. (2015). Pengaruh Perkembangan Industri Mebel Terhadap Pola Pemanfaatan Lahan di Desa Leilem Kecamatan Sonder. *Spasial*, *1*(1), 1–10. https://ejournal.unsrat.ac.id/index.php/spasial/article/view/8239

Mubita, K., Milupi, I., Monde, P. N., & Simooya, M. (2021). Safety Education and Training: On Site Lessons for Workers in Selected Construction Sites of Lusaka District. *International Journal of Humanities, Social Sciences and Education*, *8*(3). https://doi.org/10.20431/2349-0381.0803004

Nurrokhmawati1, Y., M Nataliningrum, D., & Anggraeny, D. (2022). Noise induced hearing loss among furniture factory workers PT Chitose Cimahi. *ACTA Medical Health Sciences*, *1*(Volume 1 No 1), 10–18. https://doi.org/10.35990/amhs.v1n1.p10-18

Passarella, C. (2018). Failure modes and effects analysis. *Control*, *31*(10), 72–73. https://doi.org/10.1108/02656719610118151

Punuhsingon, S. A. A. S. C. (n.d.). *Penerapan Metode Fmea (Failure Mode And Effect Analysis) Untuk Kuantifikasi Dan Pencegahan Resuko Akibat Terjadinya Lean Waste*. *6*.

Rama, H. F. S., & Bhaskara, A. (2022). Analisis Risiko Kecelakaan Kerja Pada Proyek Pembangunan Dengan Metode Fmea Dan Hazop. *Rang Teknik Journal*, *5*(1), 110–115. https://doi.org/10.31869/rtj.v5i1.2844

Ramadan, M., Sukanta, S., & Fitriani, R. (2021). Analisis Kesehatan Dan Keselamatan Kerja Menggunakan Failure Mode And Effect Analysis Di PT. XYZ. *Jurnal Sistem Teknik Industri*, *23*(1), 46–58. https://doi.org/10.32734/jsti.v23i1.4959

Ratnasingam, J., Natthondan, V., Ioras, F., & McNulty, T. (2010). Dust, noise and chemical solvents exposure of workers in the wooden furniture industry in South East Asia. *Journal of Applied Sciences*, *10*(14), 1413–1420. https://doi.org/10.3923/jas.2010.1413.1420

Sehsah, R., El-Gilany, A. H., & Ibrahim, A. M. (2020). Personal protective equipment (Ppe) use and its relation to accidents among construction workers. *Medicina Del Lavoro*, *111*(4), 285–295. https://doi.org/10.23749/mdl.v111i4.9398

Sharma, K. D., & Srivastava, S. (2018). Failure Mode and Effect Analysis (FMEA) Implementation: A Literature Review. *Copyright Journal of Advance Research in Aeronautics and Space Science J Adv Res Aero SpaceSci*, *5*(2), 2454–8669.

Suherman, A., & Cahyana, B. J. (2019). Pengendalian Kualitas dengan Metode Failure Mode Effect And Analysis

(FMEA) dan Pendekatan Kaizen untuk Mengurangi Jumlah Kecacatan dan Penyebabnya. *Jurnal UMJ*, *16*, 1–9.

Sunaryo, M. (2020). the Effect of Environmental Factor and Use of Personal Protective Equipment on the Symptoms of Acute Respiratory Tract Infections in Furniture Industry Workers. *Indonesian Journal of Medical Laboratory Science and Technology*, *2*(1), 42–49. https://doi.org/10.33086/ijmlst.v2i1.1307

V. Hendro, & Ayudyah. Eka Apsari. (2023). Pengendalian Risiko Bahaya Kecelakaan Dengan Metode Failure Mode and Effect Analysis (Fmea) Dan Hazard Identification Risk Assessment (Hira). *Jurnal Ilmiah Teknik Mesin, Elektro Dan Komputer*, *3*(2), 333–340. https://doi.org/10.51903/juritek.v3i2.1872

Were, J., & Ssennyonjo, A. (2021). Assessment of Usage of Personal Protective Equipment and Related Factors among Workers in Wood Workshops in Mutungo Parish, Nakawa Division, Kampala District. *SSRN Electronic Journal*, *11*(7), 69–74. https://doi.org/10.2139/ssrn.3883574

Widianti, T. (2016). 10th Annual Meeting On Testing And Quality 2015. *Lembaga Ilmu Pengetahuan Indonesia*, *January*.

Yasa, I. N. P. S. (2021). Implementasi Penggunaan Alat Pelindung Diri Dalam Keselamatan Pekerja Pada Cv. Dwi Jaya Mandala Di Kota Denpasar. *Jurnal Kertha Desa*, *9*(7), 15–27.

APPENDIX

Table 1. *Severity*

Rank	Severity	Description
9-10	Very high	Fatal>1 person, causing enormous losses and impacts, the whole activity was stopped.
7-8	High	Heavy injuries>1 person, causing heavy losses and production disruptions
5-6	Medium	Moderate injury, medical attention, low financial loss
3-4	Low	Minor injuries, minor financial losses
1-2	Very Low	No financial effects and losses

Table 2. *Occurrence*

Rank		Description
9-10	Very high	Frequent occurrence
7-8	High	Recurring events
5-6	Medium	Occasional occurrence
3-4	Low odds	Rare
1-2	Low chance	Almost nothing

Table 3. *Detection*

Rank	Description
10	No detection controls or opportunities can detect the causes and forms of failure
8-9	Ability to detect shapes and causes of failure is low
6-7	Small chance of detection
4-5	Medium potential detection opportunities
2-3	The probability of detection is very high
1	Potential causes of accidents can always be detected

Table 4. Results of FMEA method analysis *(Failure Mode Effect Analysis)*

	Risk Identification			Risk Assessment	
Work	Identify Potential Hazards	Failure Mode	Impact		Recommendation
1. Appointment	Feet and hands hit by nails	Not using gloves and safety shoes	Injured hand/foot	S = 4 O = 6 D =3 RPN = 72	Using safety gloves and safety shoes

	Foot crushed by wood	Not using safety shoes Non-ergonomic position	Wounds and bruises	S = 4 O = 4 D = 5 RPN = 80	Using safety shoes and applying manual handling
	Hands exposed to wood chips	Not wearing safety gloves	Infiltration	S = 4 O = 7 D = 1 RPN = 28	Using gloves
2. Cutting	Hands and feet hit by chainsaws	Not wearing safety gloves	Wound cut until cut	S = 6 O = 4 D = 5 RPN = 120	Using safety gloves and safety shoes
	Hearing impairment due to noise from the machine	Not wearing ear plug	Hearing loss occurs	S = 4 O = 8 D = 3 RPN = 96	Using ear plug
	Eye irritation due to exposure to wood dust	Not wearing eye protection	Eye irritation	S = 4 O = 7 D = 1 RPN = 28	Using safety glasses
	Respiratory distress due to inhalation of wood dust	Not wearing a mask	Respiratory disorders	S = 4 O = 4 D = 1 RPN = 16	Using a respirator
	Electric shock	Unsafe wiring	May cause burns	S = 4 O = 2 D = 3 RPN = 24	Periodic cable divisibility
3. Assembly	Hands exposed to wood chips	Not wearing gloves	Infiltration	S = 4 O = 7 D = 1 RPN = 28	Using gloves
	Finger hit by hammer	Not concentrating while hammering	Swollen injuries	S= 4 O = 3 D = 3 RPN = 36	Finger guards
	Stumbled due to limited wiggle space	Indiscriminate placement of wood and pieces of wood	Stumble	S = 4 O = 5 D = 2 RPN = 40	Work instructions

4. Sanding	Hands scratched with sand paper	Unsuitable position	Scratched wounds	S = 3 O = 5 D = 2 RPN = 30	Using gloves
5. Finishing	Chemical display	Chemical contacts	Skin irritation	S = 5 O = 3 D = 3 RPN = 45	Using gloves
	Inhalation of chemicals		Respiratory disorders	S = 4 O = 2 D = 5 RPN = 40	Provision of ventilation and respirators