Journal of Public Health for Tropical and Coastal Region
(JPHTCR)
Journal homepage: https://ejournal2.undip.ac.id/index.php/jphtr/index
ISSN : 2597-4378

Evaluation of Hazard Communication Implementation in the "X" Limited Liability Company (LLC) based on OSHA Document Standard

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Abstract
Introduction: Based on a report from the Ministry of Manpower, throughout 2021 there have been around 48,195 cases of occupational accidents and diseases in various industries. One worker factor affecting work accidents is the lack of OSH knowledge. Hazard communication is important in improving workers' expertise and safe behavior. "X" LLC is one of the high-risk industries where the application of hazard communication components, especially training at "X" LLC , is still very limited and has not fulfilled the training components in the OSHA standard. This study aims to evaluate the implementation of hazard communication at "X" LLC with the guidance of OSHA documents.
Methods: This research is evaluative. The unit of analysis in this research is the hazard communication facility implemented by "X" LLC Includes information from HSE officers and workers. Observation results were compared with the implementation of hazard communication with OSHA documents.
Results: Based on the results of observations made, it was found that the suitability of the implementation of hazard communication implemented by "X" LLC by OSHA documents of 65% (good) with a percentage of hazard classification suitability was 50% (sufficient), suitability of labeling was 71% (good), suitability of installation of signs and posters was 80% (very good), suitability of safety data sheets was 100%, suitability of socialization was 57% (good), and of implementation of training was 33% (sufficient). With these observations, it affects workers' understanding of hazards and hazard handling in their work area where workers' understanding of hazard communication comes more from experience and initial information due to limited forms of communication and training.
Conclusion: Evaluation of the implementation of hazard communication at "X" LLC obtained a conformity percentage of 65% (good) with several components requiring improvement started from the arrangement of production materials according to health hazards, adding communication media and increasing the implementation of OHS training, especially training in chemical handling, risk control and first aid in work accidents..

Keywords: evaluation, hazard communication, OHS communication, OHS socialization

DOI: https://doi.org/10.14710/jphtcr.v7i2.23924

Article History: Received: 19th July 2024, revised: 26th August 2024 accepted: 27th August 2024

Introduction

The implementation of occupational health and safety (OHS) is an important thing for every workplace. By implementing occupational health and safety (OHS), it can minimize the risk of accidents and occupational diseases in workers. Accidents are a definite threat in every type of work. Work accidents can occur due to the environment or the workers themselves. One of the worker factors that influences the occurrence of work accidents is a lack of knowledge about Occupational Health and Safety (OHS). Understanding related to OHS can be given to workers through hazard communication. Poor OHS knowledge can be caused by poor communication regarding OHS implementation.[1] Based on reports from the Ministry of Manpower, throughout 2021 there have been around 48.195 cases of work-related accidents and illnesses in various industries, which is known to have decreased from 2020 of 50,898 cases of occupational accidents and diseases, some of which were caused by workers' lack of knowledge regarding the implementation of OHS.[2] Based on this data, it is necessary to increase worker's knowledge, attitudes, and behavior. A person's behavior in carrying out their work can be determined by several things such as genetic factors, the surrounding situation, level of knowledge, and experience.[3]

One of the efforts made to improve OHS behavior is to increase knowledge related to OHS through hazard communication. Hazard communication is one thing that has an important role in improving worker's safe behavior which is still often ignored because it is not directly related and is considered less effective in preventing work accidents.[4] A good level of OHS communication in a workplace affects reducing the level of work accidents in the workplace as in the research conducted by Ali et al. (2023) where the communication process affects the incidence of work accidents.[5] The obligation to communicate risks to workers is regulated in Law Number 1 of 1970 concerning Work Safety. Laws and guidelines in Indonesia that discuss risk communication still only include guidelines for installing signs in several workplaces or only regarding labeling. Some examples of these laws include SNI 13-6351-2016 which regulates signs in mining areas and Ministry of Environmental Regulation Number 3 of 2008 regarding the provision of B3 symbols and labels. Regulations or guidelines in Indonesia that specifically address all components of hazard communication are still not available. Guidance regarding the complete implementation of hazard communication is still only provided by OSHA. The hazard communication guidance issued by OSHA aims to assist business owners in fulfilling their obligations in conveying hazard and control information to workers. The standard document issued by OSHA is considered complete and simple enough to be used as a guide in implementing hazard communication in various workplaces, especially those that use chemicals in the production process.[6]

Hazard communication is a series of efforts made to increase workers understanding and knowledge about the dangers and risks that exist in their work area so that workers can actively participate in efforts to implement OHS programs. The forms of hazard communication include hazard classification, installation of labels, signs, safety data sheets (SDS), and providing outreach and training.[7] Workers as the main actors in every work process have the right to know and understand the dangers and risks of the work they do. The existence of hazard communication can further increase worker's awareness of the importance of safe behavior at work, especially in jobs that have high risks.[8]

One workplace with extreme and high risks is the metal plate-producing industry. This is because the work process is carried out at high temperatures and produces high noise.[9] One of the studies conducted in the steel industry PT. Krakatau Steel stated that the forms of hazard communication carried out to

increase workers' insight and knowledge include installing signs, posters, banners, making bulletins, and carrying out outreach and training. Worker's interest in communication media can raise awareness of safe behavior. The uniqueness and simplicity of the media can create an attraction so that workers want to apply what is conveyed to the communication delivered.[10]

"X" LLC is one of the steel plate-producing industries located in East Java Province. Based on the results of the preliminary study that was carried out, it was found that "X" LLC has implemented hazard communication in the form of placing labels, and signs and providing outreach. "X" LLC is one of the high-risk industries where the application of hazard communication components, especially training at "X" LLC, is still very limited and has not fulfilled the training components in the OSHA standard. Compliant implementation of Hazard communication by "X" LLC according to appliance guidelines, especially documents issued by OSHA, is still unknown. Related research conducted by Mangiwa (2013) was carried out at a car painting company in Makassar City where researchers studied the application of hazard communication in the workplace, equipped with worker's knowledge, attitudes, and practices. This research provides information that providing hazard communication is only implemented in 20% of companies and is still not appropriate.[11] The suitability of implementing hazard communication at "X" LLC can be seen by evaluating the implementation of hazard communication at "X" LLC compared to OSHA document standards. Given this, this research aims to evaluate the implementation of hazard communication at "X" LLC with specified guidelines. With the evaluation results, "X" LLC can find out and make improvements to the missing components so that it is expected to reduce the incidence of accidents and occupational diseases compared to before.

Methods

This research is evaluative research to evaluate communication hazards with OSHA document standards. This research was conducted at "X" LLC which is in East Java Province in March - April 2024. The analysis unit in this study was a hazard communication facility that included hazard classification, labels, signs, safety data sheets, and socialization materials (posters, videos) that had been applied to "X" LLC. In this study, some informants provided information regarding the implementation of hazard communication at "X" LLC, namely HSE officers and workers. Information was obtained with an interview instrument obtained from parsing hazard communication points listed in the standards/guidelines used. Data from observations in this research were analyzed by comparing the level of implementation of hazard communication facilities with OSHA documents which would then be interpreted in the form of percentages. From the observation of the application of hazard identification, labeling, signs, safety data sheets, and socialization and training, the level of conformity will be calculated. OSHA document used as a guideline for the evaluation carried out is Hazard Document Standard 1910.1200 in 2024. On the observations made, a value of 1 is given to the appropriate parameters and a value of 0 is given to the parameters that are not appropriate, then the level of suitability of each hazard communication component is seen by the formula:

$$\frac{total\ corresponding\ parameters}{total\ parameters\ assessed} \times 100\%$$

Results

Evaluation of Hazard Communication Implementation

The process of evaluating the implementation of hazard communication is carried out by conducting observations of the production area and warehouse to determine the suitability of hazard communication implementation.

Based on Table 4.1, it is found that the suitability of the implementation of hazard classification is 50% where "X" LLC has not implemented the arrangement of its

main production materials containing chemicals according to their health hazards.

Based on table 4.2, it is found that the suitability of the implementation of labeling is 71% where some chemicals at "X" LLC are not equipped with complete and appropriate labels.

Based on Table 4.3, it is found that the suitability of the implementation of signs and posters is 80% where "X" LLC has implemented the installation of signs properly, but there is still a need to increase posters or other printed communication media.

Based on table 4.4, it is found that the suitability of the implementation of safety data sheets is 100% where safety data sheets have been provided on all production materials containing chemicals.

Based on table 4.5, it is found that the suitability of the implementation of socialization is 57% where the implementation of socialization is carried out with the existence of safety induction and safety talk which is carried out regularly. however, the socialization carried out is still not supported by print media or audiovisual media.

Based on Table 4.6, it is found that the suitability of the implementation of training is 33% where the implementation of training is still very limited both in terms of material and the number of workers who receive training.

Based on the table of observation results conducted on the application of hazard communication, it is found that the suitability of hazard communication application applied by "X" LLC following OSHA documents is 65% which can be categorized as good. The hazard communication component that has the highest percentage of conformity is the application of safety data sheets, which is 100% and the component with the lowest percentage with the OSHA hazard communication standard is training which has a percentage of 33%. The application of safety data sheets on chemical production materials in the "X" LLC warehouse is classified as very good because it is available for all chemical production materials and placed not far from the production materials. However, maintenance still needs to be done, especially on the cleanliness of safety data sheets. The implementation of OHS training, especially regarding hazard communication at "X" LLC, is still considered sufficient and needs to be improved by providing regular training for workers, especially in the production and warehouse areas.(Based on table 4.7).

Table 4. 1 Evaluation of Suitability of Hazard Classification Implementation in Warehouse Area

No	Observation List (Filled in by marking √)	Suitable	Not Suitable	Description
1.	Production materials (paint, thinner, tools (nuts), oil, grease) are stored and organized in specialized rooms/racks according to material classification.	√		Production materials are stored according to the type of material on shelves in a special room.
2.	Production materials are stored and organized in specialized rooms/racks according to hazard classification.		√	Production materials are only stored according to the type of material on the shelves and are not differentiated based on the hazards that can occur.
3.	Every hazard and risk from mild to severe is identified and informed to all workers.	√		Provision of information related to hazards and risks of production materials is conveyed at the beginning of work or the arrival of materials.
4.	Production materials with health hazards are differentiated based on the type of disease that can occur.		√	The arrangement of production materials is not based on the health hazards that can occur due to the use of these materials.
Suitability percentage				**50% (sufficient)**

Table 4. 2 Evaluation of Suitability of Labeling Implementation in Warehouse Area

No	Observation List (Filled in by marking √)	Suitable	Not Suitable	Description
1.	Contains 7 pieces of information a. Product identification b. Cue word c. Hazard statement d. Pictograms e. Precautionary statements f. Manufacturer's name, address, number g. Date of chemical production	√ √ √ √ √ √ √		Information on the label that comes from the ingredient manufacturer is presented completely and following the standard
2.	Labels are available in English and Indonesian	√		The label is presented in Indonesian because the manufacturer is an Indonesian company, and the users are Indonesian citizens.
3.	Clear and legible display	√		Labels are presented with concise, clear, and easy-to-understand sentences with writing sizes that are adjusted to the product packaging.
4.	Available on every material in the work area		√	Several production material products are not equipped with labels, such as oil and grease
5.	Contains up-to-date information	√		Labels contain the latest information from the product manufacturer
6.	Label is located in a safe area (not covered/wet/peeled)	√		Labels are printed directly on the product packaging
7.	Maintenance is done on the label		√	Available labels have not been actively maintained, such as cleaning and checking the completeness of labels
Suitability percentage				**71% (good)**

Table 4. 3 Evaluation of the Suitability of Signs and Posters Implementation in the Production Area

No	Observation List (Filled in by marking √)	Suitable	Not Suitable	Description
1.	Blunt sign angle		√	The available signs use banner materials and also frames that have sharp corners. However, some signs are circular.
2.	Unobtrusive bolt tip or head	√		The available signs are mostly located in areas that are not traveled by workers so that they are not disturbing.
3.	The background color is adjusted to the purpose of the sign Red color = dangerous / prohibition Yellow color = attention/caution Green color = safety instructions (safe zone, evacuation route) Blue color = mandatory instructions to be obeyed (use of PPE) White color = general information	√		The color of the signs that have been installed has been adjusted to the applicable standards.
4.	The text color contrasts with the background color.	√		The color of the writing and background of the installed signs has been adjusted to the standard.
5.	Words are concise, easy to read, and easy to understand	√		The sentences printed on signs and posters are simple, easy to read, and easy for workers to understand.
6.	Messages are presented in pictograms, written, or both.	√		The messages listed are presented with pictograms and are equipped with explanatory sentences.
7.	Placed as close as possible to the source of the hazard	√		Signs and posters have been placed according to the work area and source of danger.
8.	Not obstructed by other items or equipment		√	There are some signs and posters whose placement is obstructed by production goods.
9.	Made with durable materials and easy to maintain	√		Available signs and posters are made with durable materials and are easy to clean.
10.	Maintenance and replacement of damaged signs/posters are carried out.	√		Signs that have been damaged or inappropriate are immediately replaced but some signs cannot be cleaned because of their location which is difficult to reach.
Suitability percentage				**80% (very good)**

Table 4. 4 Evaluation of the Suitability of Safety Data Sheets Implementation in the Production Area

No	Observation List (Filled in by marking √)	Suitable	Not Suitable	Description
1.	Presented in English and Indonesian	√		Safety data sheets are presented in English and supplemented with Bahasa Indonesia.
2.	Contains 16 pieces of information: a. Material identification b. Hazard identification c. Composition d. First aid e. Fire fighting f. Accidental discharge measures g. Handling and storage h. Exposure control i. Chemical physical properties j. Reactivity stability k. Toxicology information l. Ecological information (not mandatory) m. Disposal considerations (not mandatory) n. Transport information (not required) o. Regulatory information (not required) p. Other information (revision date)	√ √ √ √ √ √ √ √ √ √ √ √ √ √ √		Safety data sheets available contain 16 pieces of information by the standard
3.	Latest SDS	√		Safety data sheets of products are kept up to date
4.	Have a copy	√		Safety data sheets of each material have copies so that they can be reprinted if there is damage or loss.
5.	Easily accessible	√		Safety data sheets are placed close to production materials
6.	Presented in clear, concise, and easy-to-understand sentences	√		Safety data sheets that are presented in Indonesian are presented in concise sentences and are easily understood by workers who use the material.
7.	Stored in a place that is easily accessible and safe (not easily lost/exposed to water)	√		Safety data sheets are stored in an easily accessible area and placed in plastic so that they are not exposed to water
8.	Checking the availability, updating, and cleanliness of the SDS is carried out	√		Checks are made on the availability and update of Safety data sheets but no cleaning has been done so it looks less maintained
Suitability percentage				**100% (very good)**

Table 4. 5 Evaluation of the Suitability of Socialization Implementation in Warehouse and Production Areas

No	Observation List (Filled in by marking √)	Suitable	Not Suitable	Description
1.	Implementation of routine socialization	√		Socialization has been carried out regularly, namely by conducting safety briefings on Monday and Wednesday before starting work.
2.	Initial information is given after new employees are accepted by the company	√		Every new worker who will start their job is given initial information before work is carried out, namely in the form of safety induction.
3.	Implementation of socialization in the form of safety talks, toolbox meetings etc.	√		Regular socialization has been carried out for workers before carrying out work.
4.	Informing about hazards in the workplace	√		Every hazard from materials and production processes has been informed to workers.
5.	Dissemination of information on the position and meaning of each sign		√	Dissemination of information related to the meaning of signs has only been informed once and has not been done again shortly.
6.	Providing information related to signs/labels/SDS through printed media		√	Provision of information related to signs/labels/SDS through printed media is still very minimal
7.	Providing information related to signs/labels/SDS through visual media		√	Providing information related to signs/labels/SDS through visual media has not yet been done and is still only verbal
Suitability percentage				**57% (good)**

Table 4. 6 Evaluation of the Suitability of Training Implementation for Production and Warehouse Workers

No	Observation List (Filled in by marking √)	Suitable	Not Suitable	Description
1.	Introduction to hazard types	√		Workers have been introduced the types of hazards from production areas and materials in OHS refresher training.
2.	Chemical handling training		√	Training related to handling production chemicals has not yet been implemented
3.	Risk control measures training		√	Training related to risk control measures is still not implemented
4.	Explanation and training on the use of labels and SDS		√	Training related to the use of labels and safety data sheets is still not implemented
5.	First aid training for accidents		√	Training related to first aid in the event of a work accident is still not implemented
6.	Disaster management training	√		Training related to disaster management has been carried out with the participation of all workers
Suitability percentage				**33% (suffient)**

Table 4. 7 Percentage of Conformance of All Hazard Communication Components

Hazard Communication Components	Percentage
Component 1 (Hazard classification)	50%
Component 2 (Labeling)	71%
Component 3 (Signs and posters)	80%
Component 4 (Safety data sheets)	100%
Component 5 (Socialization)	57%
Component 6 (Training)	33%
Percentage of conformance of all hazard communication components	**65%**

Discussion

Evaluation of Suitability of Hazard Classification Implementation

Hazard classification is an effort made by categorizing the hazard class of each production material, especially chemicals. The chemicals used can be categorized based on the physical and health hazards caused by the chemical reaction. Based on the results of observations made in the "X" LLC warehouse area, it was found that the suitability of applying hazard classification to production materials was 50% with a sufficient category. At "X" LLC there is no classification of production materials according to the hazards that can be caused. The arrangement of production materials in the "X" LLC warehouse is still carried out according to the type of production material only. For example, paint is placed together with paint of the same brand, condition, and color. The location of the material placement is adjusted to the condition of the material itself. Materials that can change shape or experience a decrease in quality due to high temperatures from outside the warehouse area are placed on higher shelves on the side that are not adjacent to high temperatures.

Appropriate arrangement of production materials helps to shorten the time for taking and adding stock of materials if there are new ones. Appropriate arrangement of materials makes it easier for workers to recognize and retrieve production materials so that the production process continues without the obstacle of missing or misplaced production materials. In addition to hindering the production process, the wrong and haphazard arrangement of production materials can result in work accidents.[12] The incidence of contamination of the work environment due to inaccuracies in the arrangement of production materials also occurred in research conducted by Wahid et al. (2020) where one of the risks of using chemicals is the air around the work area that is contaminated by chemicals in production materials.[13] Research conducted by Ramadhani (2022) explained that chemical storage must also be classified based on its health hazards to determine the controls that must be carried out when using the material. In this study, chemicals that have certain health hazards are placed in a special room, such as the use of benzene which is carcinogenic and can cause irritation to the eyes and skin.[14] The placement of the warehouse at "X" LLC is not too far from the production site, making it easier to supply materials and production equipment. Access to the production warehouse is also wide so that the mobility of distributing production materials is not hampered. The size of "X" LLC 's production material warehouse is not too large so there are several materials with large sizes and volumes placed in areas outside the warehouse, such as oil. Shelves containing production materials and equipment are labeled to facilitate searching when needed. The implementation of "X" LLC 's production material warehouse is carried out by several people consisting of the person in charge and administration in charge of organizing the entry and exit of production materials and warehouse operators who are tasked with checking the availability of

materials every day, carrying out maintenance, arranging materials, and so on. The availability of materials and neatness in the "X" LLC warehouse is quite appropriate, but for hygiene maintenance, it is not appropriate, which can be seen from the dusty safety data sheets and some parts of the shelves that are not clean. It can be concluded that "X" LLC needs to organize chemical production materials according to their health hazards and perform hygiene maintenance on these production materials. In addition to the arrangement of production materials, labeling of each production material containing chemicals is also important to pay attention to so that workers can understand the handling of chemical products used.

Evaluation of Suitability of Labeling Implementation

Labels can be defined as information that presents the identity of the product starting from the product name, composition, and manufacturer's name, to the date of product manufacture. Labels can make it easier for users (consumers) to choose and determine the right product according to their needs.[15] Based on observations made at "X" LLC, it was found that the suitability of the application of labeling on production materials was 71% in the good category. Most of the chemical products used have labels that come from the product manufacturer. However, there are some materials, such as oil and grease that still only display the product name without any further information on the label, such as caution warnings, pictograms, instructions for use, and others. Information labels regarding hazards and how to use chemicals are required to be provided by manufacturers of chemical products. Labels on chemical products help workers classify production materials based on their health hazards. Chemical information labels are also required to be inspected and maintained to ensure that the information on the label is not lost, faded, and remains legible to workers.

Information on faded labels can be completed by product user companies so that workers continue to obtain appropriate information as in the research conducted by Indrayani et al. (2022) where researchers are trying to add completeness to labels that are difficult to read.[16] Some of the main production materials that are outside the warehouse because they have a large size and volume have not been equipped with labels, namely oil and grease, where both materials are used every day on production machines so it is necessary to have complete information in the form of pictograms that show the dangers of these materials and control measures that can be used. Based on the information provided by the OHS coordinator and warehouse operator, they do not add labels and only utilize the information provided by the manufacturer of the material. Pictogram information on the label of each production chemical can also be provided in the form of signs or posters that are easy to read and understand by workers placed according to the hazards in the area.

Evaluation of Suitability of Hazard Signs and Posters Implementation

Safety signs are a form of visual hazard communication. Safety signs are instructions or directions posted in the work area that aim to serve as a reminder or information provider regarding hazards and conditions that exist in the work area.[17] In addition to signs, visual communication can also be done by installing posters. Posters in the workplace can contain information related to the hazards of materials and production processes, first aid steps in the event of a work accident, and the use of Personal Protective Equipment (PPE) for workers.

Based on the observations made, it is found that the application of OHS signs and posters in the production area is 80% which can be categorized as very good. "X" LLC has installed signs around the production area. The signs that have been installed are adjusted to the hazards and risks that exist in the area. The form of signs in each area is in the form of a warning of caution against a special condition and a recommendation for the use of Personal Protective Equipment (PPE). The signs provided in the "X" LLC work area contain pictograms equipped with explanatory sentences. Another form of visual communication besides signs is posters.

Based on the information mentioned by the OHS coordinator, it is explained that the use of posters as a communication medium has not been used for a long time and currently only utilizes the installed signs and verbal communication through socialization. Placement of signs should be done in areas that are visible to workers and easy to maintain. The positioning of signs and posters should be considered so that workers can easily read and understand the information contained in the signs and posters as in the research conducted by Amri A.K. (2023) where safety signs have been implemented and placed in areas where facilitate vision for workers and guests who are in the work area.[18] The placement of OHS information signs in the production area of "X" LLC is positioned based on the work area. In work areas with high temperatures such as in the furnace, warning signs are provided for areas with high temperatures, and in the area of physical equalization, plates are also equipped with signs warning of material that can enter the body through the eyes so that the use of Personal Protective Equipment (PPE) in the form of glasses is required. Some signs are placed at the top of the track bridge above the production area so that the signs are not covered by production equipment and can be seen by workers. The placement of some signs that are difficult to reach is followed by the presentation of information (pictograms and text) that is adjusted so that it can still be read by workers. The disadvantage of laying in such hard-to-reach areas is the difficulty of maintenance and replacement if there are signs that are dirty or damaged. The placement of OHS posters is also still lacking because there is only one poster containing chemical information placed around the warehouse area and has not been maintained and is even difficult to read because it is covered by production materials. Based on information obtained from the OHS coordinator, it was stated that when COVID-19 cases were still very high, OHS promotion efforts through posters were actively carried out, but currently the use of posters is still very limited and only relies on verbal communication. With these limitations, "X" LLC should reapply print media such as posters, magazines, booklets, and also audiovisual media to support hazard communication tools and perform maintenance on existing tools.

Evaluation of Suitability of Safety Data Sheets (SDS) Implementation

Every product that has chemicals in it must be equipped with complete information about product identity, chemical content, first aid, storage, disposal, and so on. This information is called Safety Data Sheets (SDS) and must be published by the manufacturer of the chemical product. Safety Data Sheets (SDS) are documents containing information related to chemicals published by manufacturers or makers of chemical-based products that are required to be distributed to every consumer of these products.[7]

Based on the results of observations made in the warehouse area of "X" LLC, it was found that the suitability of the application and procurement of safety data sheets was 100%. Every chemical product used in the production process has been equipped with safety data sheets from the product manufacturer. Safety data sheets are placed close to the product, making it easier to find. Safety data sheets are presented in English and equipped with a conclusion of the contents of safety data sheets in Indonesian. The information presented in the safety data sheets is complete and following OSHA Hazard Communication Standard 1910.1200. Although safety data sheets are available, they must also receive regular maintenance, updates and cleaning. Safety data sheets can be maintained by periodically checking, cleaning signs, and updating if there are safety data sheets that are lacking, missing, or damaged. The existence of safety data sheets is important to be known by employers and workers, especially those in direct contact with the material. The information presented in safety data sheets can be informed to workers through socialization or training activities. The information can also be presented with printed media in the form of guidebooks, posters, or a summary of the information in safety data sheets. Provision of information related to the use of safety data sheets in

printed media has been applied in research conducted by Fitriyani et al. (2023) where information related to safety data sheets is presented in the form of a pocketbook containing information on the application of occupational safety and health, especially in the wood furniture industry.[4] The availability and completeness of information in safety data sheets on chemical products at "X" LLC must also be followed by regular cleaning and updating maintenance, especially on safety data sheets that are damaged or less legible.

Evaluation of the Suitability of Socialization Implementation

Socialization can be defined as a person's process of conveying ideas, ideas, and concepts to others in a group so as to create a desire to participate in the group.[19] One of the socializations applied in an industry is socialization related to occupational safety and health (OHS). OHS socialization is carried out to increase workers' knowledge and awareness of the hazards that exist in their workplace so that it is important to make efforts to prevent occupational accidents and occupational diseases. OHS socialization that is usually given can be in the form of safety induction, safety briefing, safety talk, and toolbox meetings.[20]

Based on observations made at "X" LLC, it was found that the suitability of implementing OHS socialization was 57% with a good category. "X" LLC has conducted socialization to workers regarding hazards and risks in the work area. However, socialization still cannot be followed by all workers due to time constraints because the production process must continue. The form of socialization carried out by OHS officers is in the form of safety induction which is carried out at the beginning of the entry of workers in the company and safety briefing which is carried out regularly every Monday and Wednesday. In addition, OHS officers also conduct socialization to production areas to meet workers in the production area. The material provided in the brief socialization is by the conditions in the area. The provision of socialization can be said to be the most important component in the application of hazard communication because the application of all other hazard communication components must be followed by the dissemination of information to workers to facilitate understanding of the information provided, starting from hazard classification, labeling, signs and posters, and safety data sheets. Socialization is important to be carried out regularly to strengthen workers' knowledge and memory related to hazards in the workplace and controls that can be carried out to prevent unwanted events. The effectiveness of socialization on increasing workers' understanding can be seen in a study conducted by Kirom Ramadhani et al. (2024) where the provision of socialization has an impact on increasing workers knowledge and awareness of work hazards in high-temperature areas.[21]

Providing socialization to production workers at "X" LLC is done verbally related to complaints or reminders related to hazards and hazard control of each production process. Based on information provided by the OHS coordinator, the implementation of socialization generally runs in one direction without any discussion sessions, but workers are still allowed to submit complaints or ask questions related to hazards in the work process. The socialization process does not use any media, be it print, social, or audio-visual media. Communication media affects workers' interest in listening to and understanding the information conveyed. The influence of communication media, especially videos, on the addition of workers knowledge, can be seen in research conducted by Purba et al. (2023) where experiments were conducted on workers by providing educational videos related to APAR to some workers and showing that the group experienced an increase in knowledge compared to the control group.[22] "X" LLC itself has not implemented OHS communication with audio-visual media, such as videos or voice recordings. Print media is also still not actively applied which can be seen from the availability of magazines in the production area which are empty and not filled with any information. The audio-visual media applied by "X" LLC is still in the form of an introduction video to "X" LLC which is only displayed in the office lobby. The

implementation of socialization plays an important role in the implementation of hazard communication. therefore, the development of communication media facilities is also important to increase workers' insight and interest in obtaining information, be it print media, social media, or audiovisual media that can be displayed during routine socialization and training.

Evaluation of Suitability of Training Implementation

Training is an activity carried out by providing certain information and skills that support the course of activities.[23] Based on observations made at "X" LLC, it was found that the suitability of the application of OHS training was 33% (sufficient). The training provided to workers is in the form of training in the use of fire extinguishers, fire management, disaster management, and OHS refreshments. Training that specifically discusses information on the use of chemicals and their dangers and the use of safety data sheets has never been carried out so workers who come into contact with chemicals such as in the warehouse do not understand the meaning of the information conveyed in the product. Meanwhile, training on first aid in the event of a work accident is still planned to be carried out, especially for OHS staff who are also responsible for providing first aid to victims of work accidents.

Based on observations made, "X" LLC still has not implemented chemical handling training for workers who come into contact with chemicals every day. Workers are only given information on the use of chemical products and their dangers through socialization at the beginning of the workers being given a job and have never been socialized or trained again, even though training for workers is important to be given so that workers understand and increase their awareness of the dangers in their work process so that they can carry out appropriate controls. In the research article conducted by Hartayu et al. (2023), there is an increased awareness of workers in the use of Personal Protective Equipment (PPE) after they receive OHS training, one of which is training on chemical handling.[24] Other training that must also be given to workers is related to controlling work risks. "X" LLC still does not provide training to workers related to risk control of each work process, especially in the production process. Risk control training is useful in increasing knowledge in the implementation of OHS and increasing awareness in taking safe actions to prevent occupational accidents and occupational diseases as in research conducted by Safitri et al. (2023) in providing risk control training to laundry workers.[25]

Based on information from the OHS management, the officers responsible for first aid in accidents (P3K) are OHS staff. Some of the OHS staff have received first aid training outside the company and the rest still have not received first aid training certification. Based on the Regulation of the Minister of Manpower and Transmigration

Number 15 of 2008 concerning First Aid for Accidents in the Workplace, stated that the number of first aid officers in companies with high risk is 1 out of 100 workers with the condition that they have attended basic first aid training as evidenced by a certificate. The lack of training related to first aid can have an impact on the lack of knowledge and understanding of officers in handling victims of work accidents as in research conducted by Tambipi et al. (2020) where first aid officers still do not have training certification and some of them have never attended training at all, making them inadequate in handling victims of work accidents.[26] Another training that has not been implemented by "X" LLC is training related to the use of safety data sheets. Each chemical has a different exposure effect according to its chemical properties so that its use must be in accordance with the information contained in the safety data sheets that must be provided by each chemical product manufacturer. The availability of safety data sheets should be followed by providing socialization and training in understanding the contents of safety data sheets. The provision of safety data sheets without training and socialization can be said to be less effective in increasing workers' understanding and vigilance in the use of chemicals such as in the event of work accidents during the loading and unloading of ships in research conducted by Prengky Pardede (2020)

where one of the workers was unconscious due to inhalation of chemicals due to a lack of understanding regarding the contents of safety data sheets.[27] "X" LLC itself admits that it is still difficult to conduct training for all workers, especially production workers due to time constraints where production machines continue to run for 24 hours so in addition to training, strengthening information and insights related to safety data sheets can be provided during socialization, namely at safety briefings which are held every week. With the results of this evaluation, it is hoped that management can schedule training regularly and can be attended by all workers.

Evaluation of Suitability of Hazard Communication Implementation

Hazard communication or more familiarly known as hazard communication is something that is often underestimated in a workplace. Some workplace companies assume that hazard communication does not have an active role in causing work accidents [4]. This can be seen from the existence of companies that still do not install appropriate signs, provide safety data sheets, and do not routinely provide socialization and training to their workers as in the research conducted by Ariyani et al. (2021) where the company not installed signs properly and has not provided socialization or direction regarding signs in the work area so that workers underestimate this.[28] Based on the results of observations made at "X" LLC , the percentage of suitability for the application of hazard communication is 65% with a good category. "X" LLC has implemented several forms of hazard communication that can be said to be appropriate such as the installation of signs, the provision of safety data sheets and the implementation of socialization, but there are still some things that need to be improved which have been discussed further in evaluating the suitability of the application of each hazard communication component. the application of hazard communication is very important to be applied to every workplace, especially industry. with hazard communication, workers can know and understand the hazards that exist in their workplace so that they can take safe actions to avoid work accidents and occupational diseases.

Conclusion

Evaluation carried out on the implementation of hazard communication by "X" LLC found that the percentage of suitability was 65%; However, there are still several crucial things that need to be improved. Suggestions that can be given to "X" LLC to improve the implementation of hazard communication can start from the arrangement of production materials according to health hazards, adding communication media such as posters, booklets, educational videos, and others and increasing the implementation of OHS training regularly, especially training in chemical handling, risk control and first aid in work accidents. It is hoped that the increase and improvement in hazard communication facilities will be followed by an increase in workers knowledge, attitudes and behavior in implementing OHS so as to minimize the risk of work accidents and occupational diseases.

Our research provides important insights that can be used as a reference in corrective actions and improvements to dangerous communication facilities. However, this research still has limitations, including the analysis unit which has not been studied thoroughly due to limited access due to limited area. Future research could include evaluating hazard communication across all areas of the company and conducting in-depth interviews with informants.

Ethics approval

This research has received ethical approval from the Health Research Ethics Commission, Faculty of Public Health, Jember University with Number: 458/KEPK/FKM-UNEJ/IV/2024.

Acknowledgment

Researchers would like to thank "X" LLC who has given research permission and other parties who have assisted during the research process.

Funding

This research was funded privately by the researcher.

Author contribution

Researchers play a role in the research process starting from preliminary studies, data collection, data analysis, and compiling results to the final research article.

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