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## Comparative Analysis of JSA (Job Safety Analysis) of Smoked Fish MSMEs SAD Community and the General Public

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### Abstract

*This study aims to analyze occupational safety in the smoked fish production process through the Job Safety Analysis (JSA) approach in two groups of micro, small, and medium business actors, namely those managed by the Suku Anak Dalam community and those managed by the general public. The research method used is descriptive qualitative with a field observation approach and in-depth interviews to identify potential hazards and preventive measures taken at each stage of work. The results of the study indicate that in business units managed by the Suku Anak Dalam community, most work stages have the potential to cause hazards, but are not accompanied by adequate preventive measures. In contrast, in business units of the general public, several basic control measures have been implemented, such as the use of aids, gloves, masks, and protective shoes. This difference indicates a gap in the implementation of occupational safety due to factors of knowledge, culture, and access to information. This study concludes that a culture-based and educational occupational safety approach is needed to increase awareness and prevent work accidents, especially in remote indigenous communities*

**Keywords:** Occupational safety, Job Safety Analysis, smoked fish, UMKM, Suku Anak Dalam

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## INTRODUCTION

Occupational safety and health (K3) is an important aspect that must be implemented in every work environment, including in the micro, small, and medium enterprises (MSMEs) sector. The application of K3 principles is not only aimed at protecting worker safety, but also contributes to increasing productivity and quality of production results. In practice, MSMEs often face various obstacles in implementing K3, such as limited resources, lack of knowledge, and low awareness of the importance of work safety. (Kurniawan et al., 2024; Monoarfa & Miolo, 2022; Prasetyo et al., 2025).

One of the MSME sectors that is at high risk of work accidents is smoked fish processing. The smoked fish production process involves various stages of manual work such as catching fish, cleaning, smoking, to packaging. Each stage has the potential for danger, ranging from physical injuries due to sharp tools, slipping due to slippery work environments, to exposure to excessive smoke that can interfere with workers' respiratory health (Cahyani & Pramana, 2022; Syahrinisya et al., 2023). On the other hand, systematic approaches such as Job Safety Analysis (JSA) have not been widely applied in the informal sector, especially in the MSME environment based on indigenous communities such as the Suku Anak Dalam (SAD).

The SAD community has a traditional way of life that is highly dependent on natural resources and manual labor, including the processing of smoked fish as one of its economic sources. However, limited access to education, occupational safety information, and minimal formal intervention from government or private institutions means that their work practices tend to ignore the K3 aspect (Setyaningsih et al., 2023; Yantoni et al., 2025). Meanwhile, general public MSMEs generally have better access to technology, training, and basic K3 information, although implementation is still limited.

Job Safety Analysis (JSA) is a systematic method used to identify potential hazards in each work step, and establish appropriate control measures to prevent accidents (Occupational Safety and Health Administration, 2002). By implementing JSA in the smoked fish production process in both MSME groups, this study aims to compare the level of work risk and the extent to which prevention

efforts are carried out by each group, while also providing recommendations for improvements based on local culture.

## RESEARCH METHODS

Job Safety Analysis (JSA) is a systematic method used to identify potential hazards associated with each work step, and to determine preventive measures or risk controls to prevent work accidents. In the context of this study, JSA is used as an approach to analyze work activities that have the potential to cause accident risks, especially in the smoked fish production process in MSMEs. This study was conducted in two Smoked Fish MSME locations, namely the SAD community in Dwi Karya Bakti village, Bungo Regency and the general public in Paling Serumpun village, Sungai Penuh city. This study was conducted from April 24, 2025 to April 29, 2025.

In this study, JSA was used as a tool for analyzing work risks which were then linked to determinant factors of work accidents, such as human factors, work environment, tools, and procedures. The results of JSA are part of the primary data obtained through field observations and in-depth interviews.

## RESULTS AND DISCUSSION

| No.                                     | Work Stage                    | Potential Hazards   | Prevention Efforts                     |
|---|-------------------------------|---|--|
| <b>The Indigenous Peoples Community</b> |                               |   |  |
| 1.                                      | Catching Fish                 | Hit by a fish thorn/stinger   | None                                   |
| 2.                                      | Cleaning Fish                 | Slashed by a machete  | None                                   |
| 3.                                      | Washing Fish                  | Slipped or fell due to a flooded floor  | None                                   |
| 4.                                      | Soaking Fish in Vinegar Water | None  | None                                   |
| 5.                                      | Smoking Fish                  | Exposed to smoke from the smoking process and can also dirty the clothes worn | Only wearing an apron                  |
| 6.                                      | Packaging Fish                | None  | None                                   |
| <b>General Public</b>                   |                               |   |  |
| 1.                                      | Catching Fish                 | Hit by a fish thorn/stinger   | Using a fishing rod to catch fish      |
| 2.                                      | Cleaning Fish                 | Slashed by a machete  | Using regular gloves                   |
| 3.                                      | Washing Fish                  | Slipped or fell due to a flooded floor  | Using safety boots                     |
| 4.                                      | Soaking Fish in Vinegar Water | None  | None                                   |
| 5.                                      | Smoking Fish                  | Exposed to smoke from the smoking process and can also dirty the clothes worn | Using regular medical masks and aprons |
| 6.                                      | Packaging Fish                | None  | None                                   |

Source: Processed Primary Data 2025

Job Safety Analysis (JSA) analysis was conducted on all stages of work in the smoked fish production process in two groups of subjects, namely: MSMEs managed by the Suku Anak Dalam Community (SAD) and MSMEs managed by the general public. The purpose of this analysis is to identify potential hazards that arise in each stage of work and to assess the extent to which prevention efforts are carried out by each group.

### 1. The Indigenous Peoples Community

In Micro, Small and Medium Enterprises managed by the SAD community, JSA results show that almost all stages of work have potential hazards, but most of them do not have systematic prevention efforts. For example:

- a) Catching fish has the potential to cause injuries from fish spines or stingers, but there are no preventive measures such as the use of aids (tanggok).

- b) Cleaning fish has the risk of causing cuts from sharp tools (machetes), but no hand protection is used.
- c) Washing fish has the risk of slipping due to wet floors, but no special footwear is used.
- d) Smoking fish poses a risk of exposure to smoke and dirt, but only uses aprons as simple protective equipment.
- e) In the process of soaking fish and packaging, no significant potential hazards were found.

## 2. General Public

In contrast to the SAD community, the general public group demonstrated better implementation of preventive measures in dealing with potential occupational hazards:

- a) At the stage of catching fish, tools such as tanggok are used to prevent injuries from fish bones.
- b) To clean fish, workers use gloves to prevent cuts.
- c) When washing fish, the use of special shoes (safety boots) helps reduce the risk of slipping.
- d) In the process of smoking fish, workers use medical masks and aprons to reduce exposure to smoke and maintain cleanliness.
- e) The drying and packaging stages do not show significant potential hazards and there are no special control measures.

Based on the results of the JSA analysis, it can be concluded that workers in MSMEs managed by the general public have a higher level of K3 awareness compared to workers from the SAD community. This can be seen from the existence of several forms of hazard control, both technically and the use of personal protective equipment (PPE), although still in a simple form. In contrast, SAD community workers tend not to have adequate work protection, so they have a higher potential risk of work accidents. These results are an important basis for designing K3 interventions and local culture-based work safety training programs to be more effectively applied to indigenous communities.

## Discussion

Based on the results of the JSA analysis, it was found that workers in MSMEs managed by the Suku Anak Dalam (SAD) community tend not to apply the principles of Occupational Safety and Health (K3) adequately. Potential hazards are found in almost every stage of work, but there is no clear risk control strategy. This shows limited understanding and access to information and personal protective equipment (PPE), which is common among indigenous peoples or remote communities. (Yantoni et al., 2025).

In contrast, MSMEs managed by the general public show relatively better K3 awareness. The use of PPE such as gloves, safety boots, tankers, and medical masks has been implemented although it is still simple. This shows differences in knowledge, access to resources, and work safety culture between the two groups.

Identified occupational risks include physical risks such as cuts, being stabbed by fish bones, as well as environmental risks such as slipping due to wet floors and exposure to smoke. WHO (2002) stated that the traditional food processing sector is very vulnerable to work hazards due to substandard working conditions and minimal supervision. (World Health Organization, 2002).

One important finding is the minimal use of PPE in the SAD community. In fact, the use of PPE such as gloves, protective shoes, and masks can significantly reduce the risk of work accidents (Occupational Safety and Health Administration, 2023). In addition, the fish smoking process can be disrupted due to poor working environment conditions (Yantoni et al., 2025).

These results reinforce the importance of K3 education-based interventions and PPE training that take into account the socio-cultural context of local communities. Cultural-based interventions are considered more effective in increasing understanding and behavioral change in daily work practices (Brito, 2015; Fatliana et al., 2025).

## CONCLUSION

The results of the Job Safety Analysis (JSA) analysis of the smoked fish production process in two types of MSME management, namely those managed by the Suku Anak Dalam (SAD) community and by the general public, show that most work stages contain potential hazards, both physical and environmental. These potential hazards include injuries from fish bones, cuts from sharp tools, the risk of slipping due to wet floors, and exposure to smoke during the fish smoking process. In MSMEs managed by the SAD community, the application of occupational safety and health (K3) principles is still very minimal. This can be seen from the absence of prevention efforts or the use of personal protective equipment (PPE) in almost all work stages. On the other hand, in MSMEs managed by the general public, there has been an awareness to take preventive measures even though they are still in a simple form, such as the use of tanks, gloves, safety shoes, and medical masks.

This difference reflects the gap in understanding, access to K3 information, and occupational safety culture between the two groups. Socio-cultural factors, education level, and availability of resources are important elements that influence occupational safety behavior in the field.

Based on these findings, it is recommended that efforts to improve occupational safety be focused on community empowerment, especially in indigenous communities such as the SAD community. Education and socialization related to K3 need to be carried out continuously with an approach based on local culture so that it is more easily accepted and implemented by the community. In addition, it is important to provide appropriate personal protective equipment that can be used practically in daily work. A participatory approach involving traditional leaders and local communities is considered effective in building collective awareness of the importance of occupational safety. Finally, a periodic monitoring and evaluation system is needed to assess the effectiveness of the interventions provided and adjust more targeted K3 strategies in the future.

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