



ENVIRONMENTAL HEALTH INSPECTION OF SCHOOL FACILITIES AND SANITATION AT STATE ELEMENTARY SCHOOL 027 SAMARINDA ULU

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ABSTRACT

Background: A healthy school environment is essential for supporting students' health and learning. However, most previous studies have evaluated only specific aspects of school environmental health, while comprehensive assessments remain limited. This study aimed to evaluate the environmental health conditions at State Elementary School 027 Samarinda Ulu.

Methods: A descriptive observational study was conducted using observation, documentation, and environmental measurements with a school environmental health inspection form. The assessment covered water quality, air quality, food sanitation and hygiene, facilities and buildings, and vector control. Compliance was evaluated based on Indonesian school environmental health standards.

Results: Of the 107 assessed indicators, 76 (71.0%) met the standards, while 31 (29.0%) did not. Water quality and most food sanitation indicators complied with the standards. However, inadequate lighting, high humidity, excessive noise, insufficient toilet and handwashing facilities, poor waste management, and the presence of flies indicated deficiencies in sanitation infrastructure and indoor environmental quality. These findings are consistent with previous studies reporting sanitation and indoor environmental quality as the main challenges in elementary schools.

Conclusion: The school's environmental health conditions were generally adequate but require improvements in classroom environmental quality, sanitation facilities, waste management, vector control, and routine environmental health monitoring to achieve full compliance with school health standards.

KEYWORDS: Air Quality; Environmental Health; School Sanitation; Water Quality; Waste Management

1. Introduction

Human activities such as urbanization, industrialization, deforestation, and the rapid adoption of modern technology continue to alter environmental quality, which in turn shapes patterns of disease and community well-being. Environmental health plays a crucial role in preventing environment-based diseases, which continue to pose significant challenges in various regions, including diseases transmitted through water, air, and vectors (Oktarizal et al., 2024).

Schools are particularly vulnerable to these risks because large numbers of students occupy enclosed spaces for extended periods each day. When school environments fail to meet basic health standards, they can become breeding grounds for environment-based illness (Agma, 2025). This vulnerability is most pronounced at the elementary level, where children typically spend 6–8 hours

daily on school. Because of this prolonged exposure, the physical condition of the school environment has a direct bearing on students' health, comfort, and ability to learn. Schools with substandard facilities have been associated with higher rates of infectious disease, respiratory problems, and reduced concentration among students (Nazir et al., 2022; Izzani, 2024).

School sanitation constitutes one of the development priorities aligned with Goals 4a, 6.1, and 6.2 of the Sustainable Development Goals (SDGs). These three goals, coupled with the adequate provision of water, sanitation, and hygiene, represent essential prerequisites for creating a school environment that is safe and conducive to equal opportunities for healthy child development and high-quality education. To achieve this, schools require particular attention, as they are the primary settings in which students spend the majority of their time engaged in learning. Therefore, schools must be safe, comfortable, and healthy to ensure that the teaching and learning process can be carried out effectively and that educational objectives are met (Kemendikbudristek, 2021).

Adequate school sanitation facilities, including clean toilets, handwashing facilities with soap, and proper wastewater disposal systems, are fundamental requirements for establishing a healthy school environment (Abdillah & Asih, 2022). However, the condition of sanitation facilities in elementary schools in Indonesia remains a serious concern. According to the 2024 School Sanitation Profile, only 41.6% of elementary schools in Indonesia had adequate and separate toilets in good condition. Meanwhile, 60.8% of elementary schools had handwashing facilities equipped with soap and running water. In addition, 79.4% of elementary schools had access to adequate and sufficient water sources (Kementerian Pendidikan Dasar dan Menengah, 2025)

Building construction, interior room conditions, and sanitation facilities are also among the variables most frequently found to be non-compliant with established health standards (Izzani, 2024). Inadequate ventilation and high classroom density have been identified as primary determinants of deteriorating indoor air quality in classroom settings (Fussell et al., 2025).

Most existing research only focuses on one dimension, either sanitation coverage or air quality rather than assessing the school environment as an integrated system. This gap matters because health risks in schools rarely arise from a single factor; they emerge from the combined condition of water, sanitation, ventilation, and physical infrastructure. Thus, the present study aims to describe the results of an environmental health inspection conducted at an elementary school, covering sanitation facilities, building conditions, and indoor environmental quality to provide a more complete picture of the school's environmental health status.

2. Methods

This study employed a descriptive observational research design with a cross-sectional approach to assess the environmental health conditions at State Elementary School 027 Samarinda Ulu. The study was conducted on Monday, May 11, 2026. Data collection was carried out through direct field observation at the research site using a school environmental health inspection form, supplemented by measurements of noise levels, lighting intensity, dust concentration, temperature, and humidity. The variables examined in this inspection encompassed building construction, interior room conditions, school sanitation facilities, as well as water quality, air quality, and food quality, in addition to the presence of vectors and zoonotic diseases. The instrument used was the school environmental health inspection form employed by Puskesmas Bagendang. This study used an observational technique to complete the school environmental health inspection form, in which each

variable was scored 0 if it failed to meet the applicable requirements and scored 1 if it met the applicable requirements. Data analysis was performed using descriptive statistical analysis methods.

3. Result

School Environmental Health Inspection on Water Quality Aspect

Table 1. Results of School Environmental Health Inspection on Water Quality Aspect

No	Variabel / Component	Inspection Result	Quality Standard	Category
A. Water				
1. Water Supply Availability				
a.	Clean water availability	Available	Minimum 15 liters/person/day	Compliant
2. Physical Quality				
a.	Color	Colorless	Colorless	Compliant
b.	Turbidity	Clear / not turbid	Clear / not turbid	Compliant
c.	Odor	Odorless	Odorless	Compliant
3. Chemical Quality				
a.	pH	8.4	6.5–8.5 mg/L	Compliant
4. Health Requirements				
a.	Continuous clean water availability	Available at all times	Available at all times	Compliant

Based on Table 1, the inspection of water quality parameters revealed that all assessed components, including clean water availability, physical quality, and chemical properties consistently met the established regulatory standards. Notably, the water supply remains accessible at all times, and the recorded pH level of 8.4 is well within the safety threshold. These findings indicate that the school's water infrastructure effectively meets the requirements for daily consumption and sanitation.

School Environmental Health Inspection on Air Quality Aspect

Table 2. Results of School Environmental Health Inspection on Air Quality Aspect

No	Variable / Component	Inspection Result	Quality Standard	Category
B. Air Quality				
1. Physical Quality				
a.	Classroom lighting intensity	99.13 lux	200–300 lux	Non-compliant
b.	Library lighting intensity	122.6 lux	200–300 lux	Non-compliant
c.	Humidity	88.9%	40–60%	Non-compliant
d.	Noise level	64.9 dB(A)	Maximum 45 dB(A)	Non-compliant
e.	PM _{2.5} concentration	19 µg/m ³	Maximum 35 µg/m ³ / 24 hours	Compliant

No	Variable / Component	Inspection Result	Quality Standard	Category
2. Health Requirements				
a.	Smoke-free school environment	Smoking indications found	Smoke-free environment	Non-compliant
b.	School microenvironment free from excessive dust accumulation	Excessive dust accumulation found	Free from excessive dust accumulation	Non-compliant
c.	Adequate natural lighting in classroom	Natural lighting inadequate	Clear legibility at 30 cm without artificial lighting	Non-compliant
d.	Indoor air feels fresh and comfortable	Indoor air feels fresh and comfortable	Indoor air should not feel stuffy	Compliant
e.	Indoor school air odor	Odorless	Completely odorless	Compliant

Based on Table 2, the evaluation of air quality identified several critical non-compliance issues within the school environment. The most significant deficiencies pertain to environmental comfort and hygiene, specifically regarding suboptimal lighting intensity in both classrooms (99.13 lux) and the library (122.6 lux), excessive humidity (88.9%), and elevated noise levels (64.9 dB(A)). Furthermore, the presence of smoking indicators and dust accumulation from recent renovations poses potential health risks to the school community. While the indoor air remains odorless and particulate matter (PM_{2.5}) concentrations (19 µg/m³) are within acceptable limits, the environmental conditions are currently inadequate to support a healthy learning environment.

School Environmental Health Inspection on Food Aspect

Table 3. Results of School Environmental Health Inspection on Food Aspect

No.	Variables / Components	Inspection Result	Quality Standard	Category
C. Food				
1. Location and Building				
a.	Distance from toilet/restroom exposure	Not directly facing toilet/restroom	Not directly facing toilet/restroom	Compliant
b.	Distance from contamination and waste disposal sources	Protected and sufficiently distant	Must be distant from contamination sources	Compliant
c.	Structural condition and cleanliness	Structurally sound and clean	Clean and structurally safe	Compliant
d.	Floor material and cleanliness	Waterproof, non-slippery, easy to clean	Waterproof, non-slippery, easy to clean	Compliant
e.	Wall condition and cleanliness	Sturdy and cleanable	Sturdy and easy to clean	Compliant
f.	Waterproof wall coating in splash-prone areas	Not fully available	Waterproof coating required	Non-compliant
g.	Ventilation adequacy	Adequate ventilation available	Minimum ventilation area 20% of floor area	Compliant

No.	Variables / Components	Inspection Result	Quality Standard	Category
h.	Ceiling condition	No leakage or spider webs	Ceilings must be leak-free and clean	Compliant
i.	Lighting intensity in canteen	186,75 lux	Minimum 10 lux	Compliant
j.	Presence of flies, cockroaches, and rodents	Flies observed	Free from flies, cockroaches, and rodents	Non-compliant
2. Food Ingredients				
a.	Freshness of food ingredients	Fresh and undamaged	Fresh and safe	Compliant
b.	Expiration status of packaged food	Not expired	Must not be expired	Compliant
3. Prepared Food				
a.	Compliance of food additives	Compliant with regulations	Must comply with regulations	Compliant
b.	Odor quality of food	No abnormal odor	No abnormal odor	Compliant
c.	Physical quality of food	Mold-free and non-slimy	Mold-free and non-slimy	Compliant
d.	Expiration status of prepared food	Not expired	Must not be expired	Compliant
4. Food Storage				
a.	Separation of food storage	Properly separated	Raw and cooked food separated	Compliant
b.	Presence of hazardous substances	None observed	Free from hazardous substances	Compliant
c.	Refrigerator availability	Unavailable	Refrigerator required	Non-compliant
5. Kitchen/Food Processing Area				
a.	Kitchen cleanliness	Clean condition maintained	Kitchen must be hygienic	Compliant
b.	Connection to toilets	Not directly connected	Must not connect to toilets	Compliant
c.	Kitchen table condition	Easy to clean	Easy-to-clean surfaces required	Compliant
d.	Smoke ventilation facilities	Available	Ventilation facilities required	Compliant
e.	Presence of insects and rodents	Flies observed	Free from insects and rodents	Non-compliant
f.	Kitchen lighting intensity	17,35 foot-candles	Minimum 10 foot-candles	Compliant
g.	Kitchen floor condition	Non-slippery and cleanable	Level and easy to clean	Compliant

No.	Variables / Components	Inspection Result	Quality Standard	Category
h.	Handwashing facilities	Unavailable	Handwashing facilities required	Non-compliant
i.	Equipment washing facilities	Available	Washing facilities required	Compliant
j.	Waste bin condition	Covered and waterproof	Covered waste bins required	Compliant
6. Food Processing Equipment				
a.	Physical condition of equipment	Clean and rust-free	Clean and undamaged	Compliant
b.	Cleanliness of cloths/towels	Clean	Clean cloths required	Compliant
c.	Equipment storage	Not stored on racks	Rack storage required	Non-compliant
d.	Cutting board material	Non-wood material used	Wooden boards prohibited	Compliant
7. Food Serving/Sales				
a.	Serving container condition	Covered and clean	Food-grade containers required	Compliant
b.	Food serving duration	Within safe duration	Maximum 6 hours	Compliant
c.	Separation of food types	Separate containers used	Separate containers required	Compliant
d.	Display case condition	Clean and rust-free	Clean and non-toxic	Compliant
8. Sanitation Facilities				
a.	Water supply and quality	Adequate and safe	Must meet health standards	Compliant
b.	Wastewater drainage condition	Properly covered and flowing	Covered drainage required	Compliant
c.	Grease trap availability	Unavailable	Grease traps required	Non-compliant
d.	Waste bin condition	Adequate bins available	Covered bins required	Compliant
e.	Waste disposal duration	Disposed within 24 hours	Maximum 24 hours	Compliant
f.	Waste segregation	Not separated	Wet and dry waste separated	Non-compliant
g.	Plastic lining in wet bins	Available	Plastic lining required	Compliant
h.	Availability of handwashing facilities	Partially available	Soap and running water required	Non-compliant
i.	Running water availability	Available	Running water required	Compliant
j.	Availability of washing containers	Available	Sinks or buckets required	Compliant
k.	Availability of water and detergent	Adequate	Water and detergent required	Compliant

No.	Variables / Components	Inspection Result	Quality Standard	Category
l.	Presence of stagnant water	Still observed	No stagnant water allowed	Non-compliant
9. Canteen Food Handlers				
a.	Participation in food handler training	No formal training	Training required	Non-compliant
b.	Health condition of food handlers	Healthy condition observed	Must be healthy	Compliant
c.	Routine health examinations	Not routinely conducted	Examination every 6 months	Non-compliant
d.	Use of protective clothing	Properly used	Protective clothing required	Compliant
e.	Handwashing before food handling	Practiced	Handwashing required	Compliant
f.	Handwashing after toilet use	Practiced	Handwashing required	Compliant
g.	Smoking behavior during serving	No smoking observed	Smoking prohibited	Compliant
h.	Use of utensils/protective equipment	Properly used	Protective equipment required	Compliant
i.	Fingernail hygiene condition	Clean and short	Clean fingernails required	Compliant
j.	Use of rings/bracelets	Not used	Accessories prohibited	Compliant

Based on Table 3, the school canteen demonstrates adequate infrastructure, characterized by proper building structural integrity, hygienic food storage practices, and appropriate serving procedures, several sanitation management deficiencies persist. The primary concerns include the presence of vectors (flies) in food processing areas, the lack of essential equipment such as refrigerators and grease traps, and insufficient waste segregation practices. Additionally, food safety management is hindered by a lack of formal training and routine health monitoring for canteen staff. Although food quality itself is currently maintained at a high standard, these infrastructural and managerial gaps necessitate immediate intervention to mitigate potential risks of foodborne illnesses and ensure sustainable canteen hygiene.

School Environmental Health Inspection on Facilities and Building Aspect

Table 4. Results of Environmental Health Inspection on Facilities and Building Aspects

No.	Variables / Components	Inspection Result	Quality Standard	Category
D. Facilities and Buildings				
1. Facilities and Buildings				
a.	Distance between the blackboard and the front-row student	3 meters	Minimum > 2,5 meters	Compliant
b.	Distance between the blackboard and the back-row student	7,6 meters	Minimal < 9 meters	Compliant

No.	Variables / Components	Inspection Result	Quality Standard	Category
c.	Classroom density	1,64 m ² /student	Minimum 1,75 m ² /student	Non-compliant
d.	Stair tread width	33 cm	Minimum 30 cm	Compliant
e.	Stair riser height	12 cm	Maximum 20 cm	Compliant
f.	Stair width/stair area	190 cm	Minimum ≥ 150 cm	Compliant
g.	Number of male toilet/urinal facilities	1:69	Minimum 1: 40	Non-compliant
h.	Number of female toilet/urinal facilities	1:47	Minimum 1: 25	Non-compliant
2. Health Requirements				
a.	Presence of puddles	No puddles found	No puddles in the school yard, roof, or gutters	Compliant
b.	Walls Condition	Walls are strong, without cracks or damage	Walls are sturdy and intact	Compliant
c.	Mold-free walls	No mold found	Mold-free	Compliant
d.	Type of wall paint	Walls are painted with permanent paint	Permanent or non-chalk paint	Compliant
e.	Floor condition	Floors are safe and easy to clean	Floors are safe and easy to clean	Compliant
f.	Availability of stair handrails	Available	Handrails available	Compliant
g.	Availability of handwashing facilities	Not available in every classroom	Running water and soap available in every classroom	Non-compliant
h.	Bathroom cleanliness and odor condition	Bathrooms are dirty and smelly	Clean and odor-free	Non-compliant
i.	Bathroom ventilation and lighting	Insufficient lighting	Good ventilation and lighting	Non-compliant
j.	Bathroom floor condition	Bathroom floors are slippery and have puddles	Safe floors and free from puddles	Non-compliant
k.	Availability of clean water and soap in bathrooms	Soap not available	Clean water and soap available	Non-compliant
l.	Availability of segregated waste bins	Only available at certain points	Segregated trash bins available	Non-compliant
m.	Scattered waste condition	Environment is clean from waste	Clean environment	Compliant
n.	Availability of temporary waste disposal site	Not available	Temporary waste disposal site available	Non-compliant
o.	Waste condition at temporary waste disposal site	Not available	Temporary waste disposal site is clean and odor-free	Non-compliant
p.	Wastewater flow condition	Wastewater flow is smooth	Smooth wastewater flow	Compliant

No.	Variables / Components	Inspection Result	Quality Standard	Category
q.	Availability of covered wastewater storage	Available	Covered wastewater storage	Compliant
r.	Condition of wastewater drainage channels	Channels are covered and leak-free	Channels are covered and leak-free	Compliant
s.	Septic tank condition	Available	Proper septic tank	Compliant
t.	Availability of evacuation assembly point	Available	Evacuation area available	Compliant
u.	Presence of permanent water storage in bathrooms/toilets	No permanent water storage found	No permanent water storage	Compliant

Based on Table 4, The inspection results showed that most facilities and building components met environmental health standards, indicating that the school infrastructure generally supports a safe and comfortable learning environment. Several physical aspects, including classroom layout, student-blackboard distance, stair dimensions, wall conditions, floor safety, wastewater drainage, and septic tank availability, were categorized as compliant with the requirements.

However, several critical facility-related problems were identified. Classroom density was below the recommended standard, which may reduce learning comfort and increase the risk of disease transmission due to limited space between students. In addition, the ratio of toilet facilities for both male and female students did not meet the required capacity, indicating insufficient sanitation infrastructure.

Sanitation facilities were the main area requiring improvement. The school lacked complete handwashing facilities in every classroom, while bathroom conditions were still inadequate due to poor cleanliness, unpleasant odors, insufficient ventilation and lighting, slippery floors with standing water, and the absence of soap. Waste management facilities also needed improvement, particularly the availability of segregated waste bins and temporary waste disposal areas. These deficiencies may contribute to increased risks of environmental pollution and the spread of infectious diseases among students.

School Environmental Health Inspection on Vectors and Disease-Carrying Animals Aspects

Table 5. Results of Environmental Health Inspection on Vector and Disease-Carrying Animal Aspects

No.	Variables / Components	Inspection Result	Quality Standard	Category
E. Vectors and Disease-Carrying Animals				
1. Vectors and Disease-Carrying Animals				
a.	Larvae-Free Index	No larvae detected	Maximum 100%	Compliant
b.	Average fly population rate	Several flies were observed	Maximum < 2 flies	Non-compliant
c.	Average cockroach population rate	There are no cockroaches	Maximum < 2 cockroaches	Compliant

Based on Table 5, The inspection of vectors and disease-carrying animals showed that the school environment was generally controlled. No mosquito larvae were detected, resulting in a satisfactory Larvae-Free Index, and no cockroach infestation was identified. These findings indicate that basic vector prevention measures are functioning adequately. Nevertheless, the presence of flies was identified as a sanitation concern. Fly density exceeded the acceptable standard, suggesting that environmental cleanliness and waste management practices may still require improvement. Flies can

act as disease vectors, especially when sanitation facilities and waste disposal systems are not properly maintained.

Overall, the School Environmental Health Inspection assessed a total of 107 indicators across five environmental health aspects. Of the total indicators evaluated, 76 indicators complied with the established environmental health standards, while 31 indicators were categorized as non-compliant. These findings indicate that the overall environmental health condition of the school was generally adequate. However, several indicators still did not meet the required standards. The non-compliant findings were primarily related to sanitation facilities, indoor environmental quality, and environmental cleanliness, which may potentially affect the comfort, safety, and health of the school community. Therefore, continuous improvements and regular monitoring are still necessary to achieve optimal school environmental health conditions.

4. Discussion

The School Environmental Health Inspection at SDN 027 Samarinda Ulu showed that, although most environmental health indicators complied with the established standards, important deficiencies remained in sanitation facilities, indoor environmental quality, and environmental cleanliness. These findings indicate that targeted improvements are needed to create a healthier and safer learning environment. These findings indicate that the environmental health condition of the school was generally adequate; however, several important indicators related to sanitation facilities, indoor environmental quality, and environmental cleanliness still require improvement to support a healthier and safer learning environment.

The adequate water quality observed in this study reflects good compliance with school environmental health standards and provides an important foundation for hygiene and disease prevention. Safe water supports hand hygiene, sanitation practices, and reduces the risk of waterborne diseases among students (Poague et al., 2022). According to the World Health Organization (WHO), adequate access to safe drinking water in schools contributes significantly to improving students' health status, attendance, and learning performance (WHO & Unicef, 2021). The findings of this study are also consistent with research conducted by Jasper et al. (2012), which explained that schools with adequate clean water facilities tend to have better hygiene conditions and lower risks of infectious disease transmission.

In contrast, the air quality assessment revealed several environmental health problems within the school environment. The classroom and library lighting intensity did not meet the recommended standards; humidity levels were excessively high, and noise levels exceeded the permissible threshold. In addition, smoking activities and dust accumulation from renovation activities were still identified around the school environment. Poor indoor environmental quality may negatively affect students' concentration, comfort, and academic performance. Previous studies have demonstrated that inadequate lighting and poor ventilation in classrooms are associated with decreased learning productivity and increased fatigue among students (Mendell & Heath, 2005). Excessive humidity may also promote the growth of mold and microorganisms that can trigger respiratory problems and allergies. Furthermore, poor indoor air quality in educational settings has been associated with increased absenteeism and reduced cognitive performance among students (Andriani, 2021).

The high noise level identified in this study may interfere with communication and learning activities in classrooms. The WHO (2018) stated that prolonged exposure to environmental noise in educational settings can reduce students' cognitive performance and concentration. Furthermore, the existence of smoking activities within the school environment indicates that the implementation of smoke-free school policies has not been fully optimized. Exposure to cigarette smoke in school environments may increase the risk of respiratory disorders among students and teachers, especially in enclosed spaces with limited ventilation. Research by Dalimunthe and Sari (2020) also explained that chronic noise exposure and environmental disturbances may negatively affect children's psychological well-being and academic achievement.

Although several air quality indicators did not meet standards, the PM_{2.5} concentration remained below the maximum allowable limit. This finding suggests that particulate air pollution within the school environment was still relatively controlled. Adequate air circulation and the absence of unpleasant odors also indicated that some aspects of indoor air quality management were functioning properly. Nevertheless, continuous monitoring and environmental control efforts are still necessary to maintain healthy indoor air conditions. Environmental monitoring programs are important to ensure early detection of indoor environmental hazards and to maintain safe learning environments for school communities (Putri & Hibana, 2024).

The assessment of food sanitation and hygiene in the school canteen demonstrated relatively good conditions, where most components related to food ingredients, prepared food, food storage, kitchen sanitation, and sanitation facilities complied with health standards. These findings indicate that the school canteen had implemented several important principles of food hygiene and sanitation. Food sanitation is an important aspect of school health because contaminated food may become a source of foodborne diseases among school-aged children. According to WHO (2022), safe food handling practices in school canteens are essential to prevent microbial contamination and protect students' health.

However, several shortcomings were still identified in the school canteen inspection, including the absence of refrigerators for food storage, inadequate grease traps in wastewater drainage systems, insufficient handwashing facilities, and the presence of insects or rodents in certain areas. Food handlers had also not attended formal food hygiene training and did not undergo regular health examinations. These conditions may increase the risk of food contamination if not properly addressed. Previous studies have emphasized that food handler hygiene knowledge and regular sanitation monitoring are strongly associated with food safety outcomes in school canteens (Clayton et al., 2002). Similarly, Prasetyo and Khoiriani (2023) highlighted that inadequate food handler hygiene practices remain one of the major contributors to foodborne disease outbreaks in institutional settings, including schools.

The inadequacy of sanitation facilities indicates that school infrastructure has not fully supported healthy behaviors among students. Limited handwashing facilities, poor toilet conditions, and inadequate waste management may increase the risk of communicable diseases while reducing students' comfort during learning activities. These findings are consistent with WHO and UNICEF (2021), which highlight that adequate sanitation infrastructure is essential for disease prevention and healthy behavior. Similar associations have also been reported by (Gebrehiwot et al., 2020) and (Sharma et al., 2024), who found that inadequate school sanitation contributes to higher disease risk and reduced student participation.

Poor waste segregation and the absence of temporary waste disposal facilities indicate weaknesses in school environmental management. Inadequate waste management may increase environmental contamination and provide breeding sites for disease vectors. Similar findings have been reported by y (Njau et al., 2024), while (Putri et al., 2025). also emphasized that unmanaged waste contributes to microbial growth and vector proliferation.

The presence of flies indicates that environmental sanitation has not yet been fully optimized despite the absence of mosquito larvae and cockroaches. Flies are important mechanical vectors that may contaminate food and surrounding surfaces, increasing the risk of infectious diseases (CDC, 2022). This finding is consistent with (Julissasman & Lizam, 2025). while (Rasyid et al. 2024) emphasized that routine vector surveillance and environmental sanitation are essential for effective vector control.

Overall, the findings indicate that improving school environmental health requires integrated interventions rather than isolated facility improvements. Priority should be given to enhancing classroom environmental quality, strengthening sanitation and waste management systems, enforcing smoke-free school policies, improving handwashing facilities, and maintaining food hygiene through regular supervision and food handler training. These measures are expected to reduce environmental health risks, improve students' well-being, and create a safer learning environment. This recommendation is consistent with the Indonesian Ministry of Health (Kemenkes RI, 2023) and (WHO, 2025), which emphasize comprehensive environmental health management as an essential strategy for promoting healthy schools and improving educational outcomes.

5. Conclusion

The environmental health inspection at SDN 027 Samarinda Ulu showed that the overall environmental health conditions were generally adequate, with most assessed indicators complying with the established standards. However, important deficiencies remained in sanitation facilities, indoor environmental quality, waste management, and vector control, indicating that the school has not yet achieved optimal environmental health conditions. These findings highlight the need for integrated improvements rather than isolated interventions. Priority actions should focus on upgrading sanitation facilities, improving classroom environmental quality, strengthening waste management practices, and implementing routine environmental health monitoring to reduce health risks and provide a healthier, safer, and more supportive learning environment.

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