

The Health Impacts of Haze from Land and Forest Fires Pekanbaru City, Riau Province

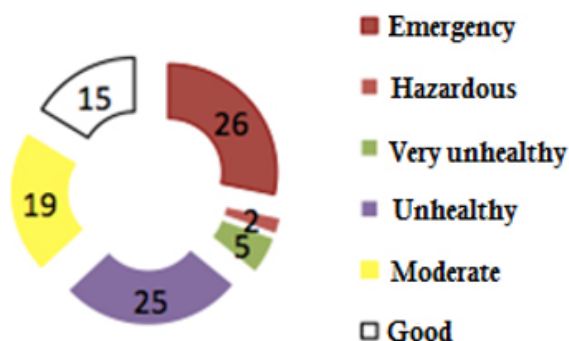
For almost two decades, the citizens of Pekanbaru City have been forced to live in a heavy layer of smoke due to land and forest fires engulfing Riau Province. It is estimated that the haze crisis has been worse in the last five years. The haze during August 2015 until the end of the year, coinciding with the time of El Niño, paralysed the city even further. The hazardous smoke—a mixture of gas, particles, and other toxic chemical substances—have reduced Pekanbaru City's air quality index to a dangerously low level; threatening the health of approximately 1 million citizens.¹

The Decline of Air Quality in Pekanbaru City

As a city highly susceptible to haze, Pekanbaru City is equipped with an Air Pollution Index (API) machine that calculates Particulate/dust (PM10), Carbon monoxide (CO2), Sulphur dioxide (SO2), Nitrogen dioxide (NO2), and Ozone (O3) to determine the daily ambient air quality. The result of the API calculation for Pekanbaru City during the haze attack in August until October 2015 demonstrates that Pekanbaru tends to be dominated with polluted air as demonstrated below:

Source: Processed from the results of the daily API calculation by Air Laboratory Pekanbaru City January-December 2015

The Air Pollution Index of Pekanbaru City (August-October 2015)



In this calculation, Particulate (PM10) is the substance with the largest impact on people's health due to its association with the increasing number of deaths, hospital or medical treatments, visits to the Emergency Unit and symptoms of respiratory problems. These respiratory problems deteriorate one's health and disrupt the lungs' functions of individuals with a history of asthma and chronic obstructive pulmonary disease (COPD).² When the haze occurred, the API calculation demonstrates the highest level of Particulate (PM10) in Pekanbaru City; reaching 858 in September and 870 in October, far exceeding the permissible levels of good air quality (0-50) and moderate air quality (51-100). The extreme decline of air quality level is a serious threat to the health of all Pekanbaru's citizens. It is thus unsurprising that many refer to the haze attack as a health disaster.

Haze-Related Diseases and Health Problems

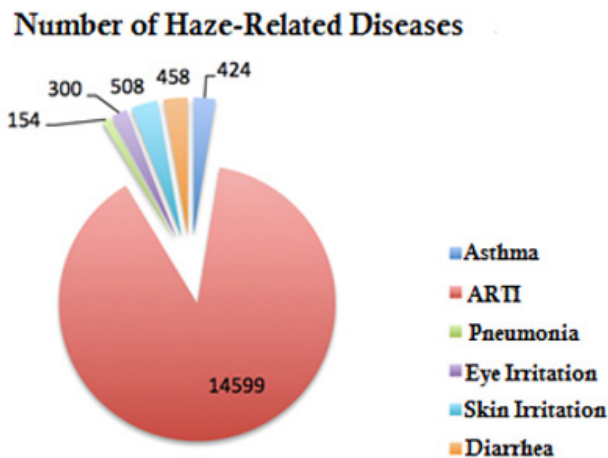
The impact of haze on people's health is influenced by two aspects, namely the concentration of oxygen and pollutants that contaminate the air.³ When the air is polluted, the level of oxygen in the air is reduced, causing respiratory problems

and trouble breathing for otherwise healthy people. The micro polluting contents such as particulate or dust (PM10), as small as 10 microns, enable the entrance of such particulates to the body, thus irritating people's body organs such as eyes, nose, throat, and lungs.

The irritation caused by breathing in these particles can trigger Acute Respiratory Tract Infection (ARTI), which affects the lungs and causes pneumonia. This condition can be worse when experienced by vulnerable groups such as babies, infants, pregnant women, seniors, and people with a history of respiratory diseases.

During the worst period of the 2015 haze, 5 people died due to respiratory failures, namely Luthfi (9), Muhanum (12), Nafizah Azahrah (1), Umaryanta (45), and Muhammad Iqbal Ali (31). Apart from the deaths that it led to, the haze also caused a number of diseases for the citizens of Pekanbaru City as recorded below:
The recorded data is estimated to be smaller than

Data source: Summary of Daily Report for Haze-Related Diseases Caused by Land and Forest Fires (29 June-4 November 2015) by the Health Office of Pekanbaru City

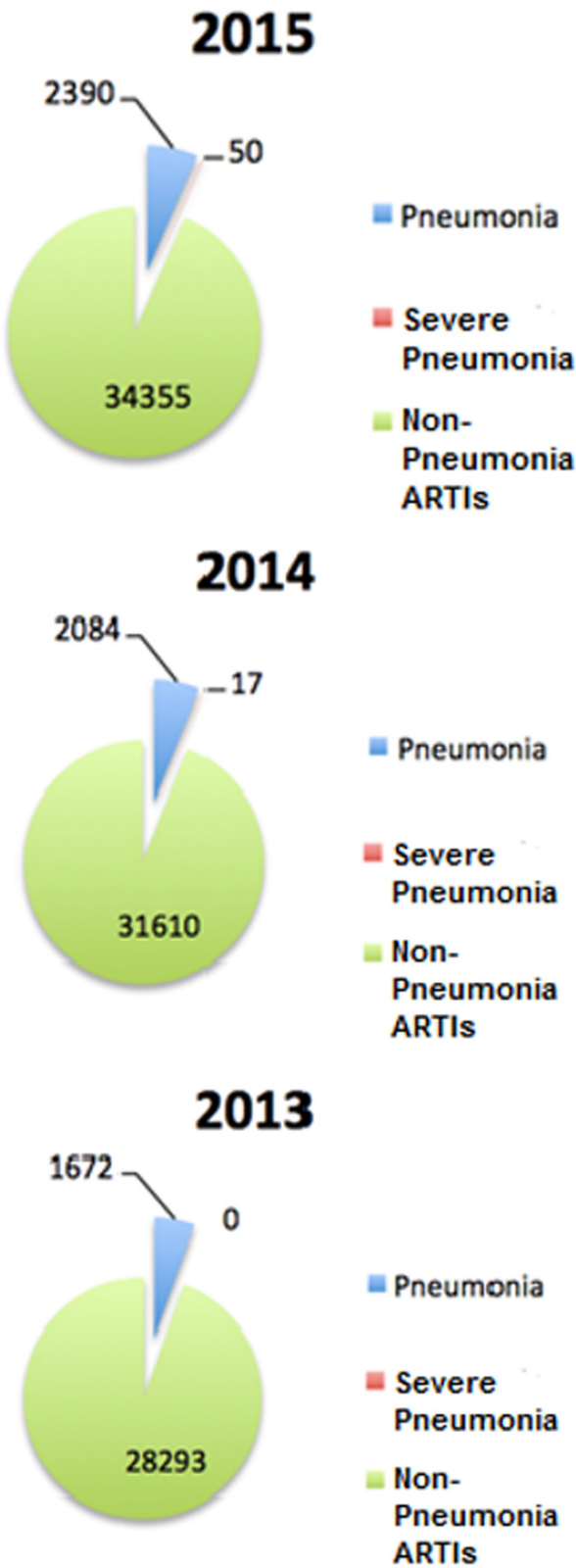


the actual numbers. According to the people and volunteers, many locals did not or were unable to access health facilities, be it hospitals, community health centres, clinics, or health posts established during the haze, and as a result their problems were undocumented.⁴

Babies and infants are also especially vulnerable to health problems due to their shorter respiratory tract and lower immune system.⁵ Apart from

the general health problems such as eye irritation, skin irritation, and diarrhea, the data from the Health Office of Pekanbaru City records the rate of ARTI experienced by babies and children under 5 in Pekanbaru City for three consecutive years as follows:

Data source: Summary of P2 ARTIs Monthly Report in 2015, 2014, and 2013
Health Office of Pekanbaru City



Apart from ARTIs and pneumonia, newborn babies also experience other health problems, particularly caused by the lack of sun exposure. The women who gave birth during the worst period of the haze in August-October 2015 reported that in hospitals and birth clinics it was very common to experience cases of underweight newborns and newborn jaundice, causing the babies to be incubated.⁶

In addition, women who were pregnant during the haze period also complained of pregnancy complications and even miscarriages due to their exposure to the haze.⁷ In several extreme cases, WRI's FGD findings in Rumbai Sub-district found that a number of babies were born with heart-related diseases such as weak hearts and heart valve regurgitations, presumably caused by haze-related pregnancy complications. During their pregnancy, the women were stuck in their house for months due to the haze.

Although they admitted there is still no research that can prove the direct impacts of the haze on birth complications to newborns' organs in Pekanbaru City, representatives of the Health Office of Pekanbaru City and Community Health Centre of Lima Puluh Sub-district did not dismiss the possibility of this connection.⁸ The representative of Lima Puluh Sub-district's Community Health Centre, who has a background in Environmental Health, conveyed his concern that an elongated exposure to haze can cause miscarriages in the short term and babies born with physical defects in the long term.

Severe Impacts, Minimum Mitigation

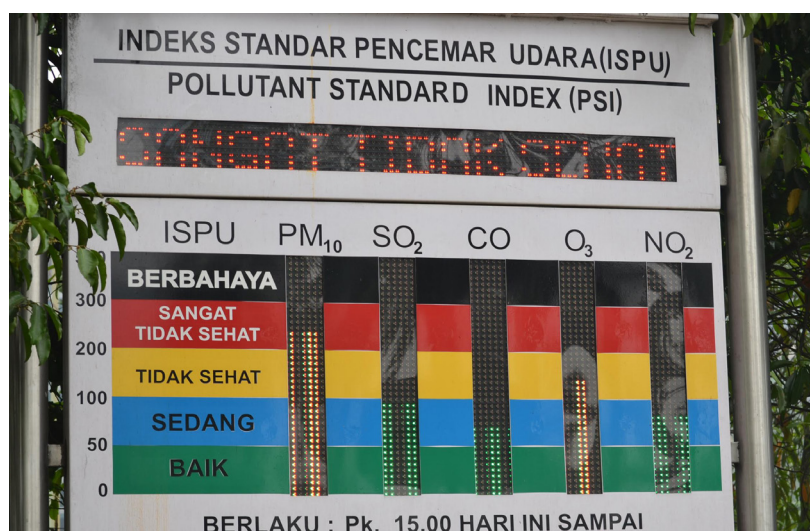
The Indonesian Health Ministry has issued a recommendation for mitigation during haze incidents. When the API reaches a hazardous or emergency level, the recommended action is to stay indoors and close all doors and windows. Vulnerable groups such as children under 5 years, pregnant women, senior citizens, and people with respiratory diseases are recommended for selective evacuation to pollutant-free places.

In response to this recommendation, the haze disaster control team opened health posts and sterile evacuation posts for babies, children under 5 years, pregnant women, and breastfeeding mothers. However, these posts were not widely utilised. The sterile posts for mothers and babies, for instance, were accessed by 7 people only despite the total population of babies and toddlers in Pekanbaru that were recorded at 103,812 in 2015.

The lack of individuals accessing these posts does not signify the lack of need for evacuation places and health services. In fact, WRI's field findings confirmed the opposite. The need is very high, but people are reluctant or find it difficult to access the health posts due to several reasons, particularly because they view the posts ineffective and inaccessible. The people who visited health facilities such as the Community Health Centre also complained of the lack of facilities and medicines available, in addition to the difficulties of travelling to the clinic in the haze.

The usage of masks is also recommended to minimise the impact of haze. The high demand of masks was responded by the Ministry of Health by sending 27,595 tonnes of masks.⁷ However, WRI's findings indicated that the supply of masks is far from the actual need of masks. There were still many people who did not receive the free masks from the government or non-government institutions such as private companies and NGOs. This was partly due to the scope of distribution which failed to reach the people's residential areas, and partly because of inadequate supply of masks.

Source : Green Radio



Currently, there is hardly any dissemination on the health impacts of haze. In health education socialisations, the material about haze is not a main subject and is only allocated a small portion, de-

Source : VIVA.co.id



spite its annual occurrence in Pekanbaru. It is thus unsurprising that many citizens of Pekanbaru are unaware of the impacts of haze and how to protect themselves and their family from its health effects.

In addition, although haze-related health problems have severely compromised the people's health, both in terms of intensity and quantity, there is still no specific research on the haze's short-term and long-term health impacts to the citizens of Pekanbaru City. The consequence can be predicted; the parties responsible for the health sector in Pekanbaru can only make presumptions about the future of the citizens' health. Without adequate information on the citizens' actual health condition, how can the anticipation and mitigation actions be adequately planned?

End Note

1. *The data of the population number according to the age group and sex (2014)*, Statistics Indonesia of Pekanbaru City.
2. World Health Organisation. "Report of Biregional Workshop on Health Impacts of Haze-Related Pollution". Accessed at http://apps.who.int/iris/bitstream/10665/207950/1/RS_98_GE_17_MAA_eng.pdf on 28 July 2016, at 13.20 WIB.
3. Nurul Fitria. (2015). "Derita Rakyat Riau Karena Asap". Accessed at <http://jikalahari.or.id/wp-content/uploads/2016/06/Majalah-Jikalahari-BAHAYA-ASAP-KARHUTLA-MELANDA-RI-AU.pdf>, on 7 August 2016, at 20.22 WIB.
4. Findings from discussions with NGOs in Pekanbaru City and KOMNAS HAM's representatives on Human Rights Violations in the Haze Disaster in Pekanbaru City, on 2 June 2016.
5. Nurul Fitria. (2015). "Derita Rakyat Riau Karena Asap". Accessed at <http://jikalahari.or.id/wp-content/uploads/2016/06/Majalah-Jikalahari-BAHAYA-ASAP-KARHUTLA-MELANDA-RI-AU.pdf>, on 7 August 2016, at 20.22 WIB.
6. Findings in Women Research Institute's focus group discussion with the local women of Sukajadi and Rumbai Sub-districts, Pekanbaru, on 26 May 2016 and 28 May 2016 respectively.
7. *Ibid.*
8. Women Research Institute's interview with representatives of Pekanbaru City's Health Office and Lima Puluh Sub-district's Community Health Centre on 31 May 2016.
9. Izdor. (2015). "Masker Kemenkes Disebut Tidak Layak, Ini Kata Nila". Accessed at <http://www.riauonline.co.id/2015/10/07/masker-kemenkes-disebut-tidak-layak-ini-kata-nila> on 3 August 2016, 12.16 WIB.