

The impact of a landfill fire on ambient air quality: A study of Jambuva landfill site, Vadodara

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Abstract

This paper includes the study carried out to observe changes in ambient air quality after the fire accident occurred at Jambuva Landfill site on 16 February, 2018. The Sampling of air pollutants like PM_{2.5}, PM₁₀, SO₂ and NO₂ was done at the accident site. Consequences of the investigation of test were very higher than the guidelines (N.A.A.Q.S).

Keywords: Ambient air sampling, Landfill site, PM_{2.5}, PM₁₀, SO_x and NO_x

INTRODUCTION

The total area of Vadodara city is around 149 km² with population of 13.23 lakhs and the total solid waste generation is 750 M.T per Day (0.1 to 0.5 per capita per day). Jambuva landfill site area is developing area surrounded by the large number of residential societies well as number of schools too. The fire had at first began on Friday 16 February 2018 and the VMC had an intense time controlling it. The fire which broke out at site on Monday was eventually brought under control on Monday morning. Smoke kept on radiating from the strong waste dumping site at Jambuva landfill site in the southern piece of the city of Vadodara. Generally the fire usually caused when methane gas which is released when trash decomposes, comes in contact with air. The municipal body additionally began covering the junk with earth utilizing around 15 dumpers that worked for the duration of the day since the fire came to take note. Inhabitants in the region have been griping of smell exuding from the site and say that while the flares have been splashed; smoke continued leaving the site. The tree huggers recommend that the fire was a wellbeing danger as materials like plastics would have burst into flames. To analyse the different acute and chronic effect of this fire on the neighbourhood as well as at site itself. As with the all fires those which produce with toxic smoke and gases which can result in nausea, head ache, fatigue due to lack of proper sleep in exposed residence. The standard methods of examining of various air toxins (like PM_{2.5}, PM₁₀, SO₂ and NO₂) were finished. The area was at Jambuva landfill site where the fire mischance was happened. The inspecting was finished by the standard strategy in Lab Manual] and comes about were computed.

GUIDELINES AND RESULT

*As per IS-5182

Pollutant	Time	Industrial, Residential, Rural and other Areas	OUTCOME
SO ₂ , µg/m ³	24 Hrs	80	111.96
NO ₂ , µg/m ³	24 Hrs **	80	1490.00
PM _{2.5} , µg/m ³	24 Hrs **	60	9.18
PM ₁₀ , µg/m ³	24 Hrs **	100	100

CONCLUSIONS

In general daily mean concentration of air pollutants do not dramatically affected but as this fire occurred at land fill site and even after 40 days of the accident the air pollutants level in the environment is higher than the surrounding air quality gauges. The effects of different air pollutants on human health include eye irritation, respiratory problems as well as the pollutants like particulate matter can reduce visibility and adversely affect to your heart too. This sampling highlight that the even after the 40 days of fire the air pollutant concentration is higher at this much level their might be some serious health threat possessed at site in future. Proper solid waste management system can eliminate the risk of fire at landfill site and eventually eliminate the pollutants levels as well.

REFERENCES

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