

ABSTRACT

It is the first time to do an investigation of the abundance, characteristics, and distribution of microplastics released from waste burning furnace (WBF). Although several studies investigating MPs present in the air environment have been carried out in several locations worldwide, a study on the abundance, characteristics, and distribution of MPs released from WBF has never been carried out. Therefore, this study aims to investigate the abundance, characteristics, and distribution of microplastics released from WBF. The study locations were at two WBFs (WBF1 and WBF2) in Sidoarjo, Indonesia. The MPs were collected using a glass beaker with a collecting diameter of 9 cm and monitored for 8 h. To evaluate the distribution of MPs around the WBF, the monitoring was carried out at two different sampling points, which are 3 m and 15 m from each WBF. Several characteristics of MPs in terms of the number of particles, size, color, and polymer type were also evaluated. This study found that MPs were observed ranging from 10 to 34 particles and 9 to 33 particles for WBF1 and WBF2, respectively. In general, the polymer type of MPs at WBF1 was, cellophane, while at WBF2, the polymer type is polytetrafluorethylene. Moreover, it was also estimated that about 1.9 to 2.3 MPs can enter the human body via inhalation.

Keywords: Air pollution, plastic pollution, microplastic, environmental health.