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An Assessment of Variation of Damage with the Distance from an Open Dump Site: A Case Study of Methotamulla Dumpsite, Sri Lanka

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Abstract

Present Municipal Solid Waste (MSW) generation in Sri Lanka is around 6,500 to 7,000 metric tons per day of which 50% is collected and disposed by local authorities. Western province collects 2,100 metric tons of MSW of which Colombo Municipality is responsible for 800 metric tons per day. Open dumping has been the most common method of disposal of such waste.

After prohibition of the use of the Bloemendhal site in 2009 by the Supreme Court, Colombo municipality used Meethotamulla area for waste dumping which had a small dump site used by the Kolonnawa municipality. Currently 800 metric tons of MSW is being dumped daily and around 1000 households have been affected around the dumpsite. Open dump sites often generate certain non-uniformly mixing pollution externalities. The main objective of the study is to assess the variation of damage perceived by the surrounding community with the distance from the dumpsite.

A household survey was conducted using a pre-tested questionnaire among the surrounding community of the dump site. Stratified random sampling was adopted and households were selected from distances of 100m, 200m, 300m, 500m and 700m along three directions. Total of 117 households were surveyed from May to August 2016. The respondents were asked to rank various disturbances in a 1-5 Likert scale. Common disturbances identified in a pilot survey including damages to the property, risk of life and health impacts, disturbance from insects and other animals, etc. were used in the survey. Kruskal-Wallis test was performed to test the significance between different strata.

In general, results indicate that all the damages decline with the distance. The damages to structure of the houses, damages to pipe lines etc. have a higher impact within first 100m from the dump site. Risk of illness had a gradual decline with the distance away from the dump site. The disturbances due to dust significantly declines after 200 m away from the dump site. Disturbances due to mosquitoes and flies tend to drop significantly after 200 m. Disturbances from crows have a higher impact within first 300 m. The odor seems to have a higher impact up to 700 m compared to other disturbances. Impact of flooding due to blockage of channel system by the dump is high within first 200 m. The disturbances by stray dogs prevail to exist only within first 100 m. The risk of life has a higher impact within first 200 m. The noise nuisance of heavy vehicles used for operations of dumpsite has a gradual reduction however it significantly reduces after 100 m and beyond 300 m there is no significant change in impact. The study emphasizes the usefulness of assessments of damage variation for their subsequent estimation.

***Keywords*:** Municipal solid waste (MSW), Open dump site, Damage variation, Distance