Fuzzy logic based advisory for handling landfill operational problems for early warning and emergency response planning

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Abstract : Day to day operations in a typical landfill involve multitude of tasks. Any error or careless handling may lead to a catastrophic event. To reduce the possibility of such events and assists landfill managers/solid waste personnel, a fuzzy expert system has been developed. This paper details the development of fuzzy expert system as a forethought, for the proposed bio-reactor landfill for city of Dehradun of Uttarakhand. This system christened as "Advisory for Handling Landfill Operational Problems", provides advice as well as early warning and aids development of emergency response plans. Monitored values concerning working conditions at operating landfill gives as input, the fuzzy inference advisor considers the probability of occurence of problems and accordingly provides advice and aids in developing emergency response plan. It aims at providing assistance to inexperienced managers in charge of landfill. It enables managers gain experience, preventing accidents and operational problems in operating landfills. The developed system was validated against several synthetic test cases to check its performance.

Key Words : Fuzzy; landfill operational problems; landfill managers, solid waste.

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