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Finite State Markov Chain Model of Pollutants from Service Stations

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Abstract : The cumulative vapors emitted from the service stations may represent a hazard to the environment and the population. Besides fuel spill and their penetration into deep soil layers are the main contributors to soil and ground-water contamination in the vicinity of the petrol stations. The amount of the effluents from the service stations depends on strategy of maintenance and the policy adopted by the management to reduce the pollution. One key of the proposed approach is the idea of managing the effluents from the service stations which can be captured via use of a finite state Markov chain. Such a model can be embedded within a probabilistic operation and maintenance simulation reflecting the action to be done. In this paper, an approach of estimating a probabilistic percentage of the amount of emitted pollutants is presented. The finite state Markov model is used for decision problems with number of determined periods (life cycle) to predict the amount according to various options of operation.

Keywords : environment, markov modeling, pollution, service station
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