

Abstract

Elimination of the consequences of environmental pollution with adsorbent based on polymer waste.

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Relevance of the study. There are many ways to use polymer waste as secondary resources. The most promising way, from the point of view of reducing the negative impact on the environment, is the processing of polymer waste to produce sorption materials. Such materials are especially in demand in the field of emergency response (ES) related to oil spills. In this regard, it is urgent to solve the problems of creating an effective method of recycling expanded polystyrene (PS) to obtain a sorbent for collecting petroleum products. The purpose of the work. Reduction of the negative impact on the population and the environment (OS) of polymer waste products due to their disposal with the production of secondary materials used to eliminate oil spills.

The tasks of the work. To achieve this goal, it is necessary to solve the following tasks:

- analyze the properties of sorbents used to eliminate oil spills;
- to substantiate the optimal composition of a composite sorbent with increased oil capacity and to investigate the properties;
- to substantiate a method for eliminating oil spill when using the resulting composite sorbent;
- to assess the damage caused to the population and the environment when using the developed and known methods of oil spill response.

Scientific novelty. A method has been developed to reduce the negative impact of PS on the environment and eliminate emergencies related to oil spills, which differs from the known ones in that during the disposal of PS a composite sorbent is obtained, used to eliminate the consequences of oil spills of local significance. The resulting composite sorbent has a high oil capacity and low cost.

Practical and theoretical significance. During the utilization of polymer waste – PS, a new composite material used to eliminate oil spills was obtained by the developed method. The composite sorbent showed a high oil capacity, exceeding the existing sorbents of this

segment by an average of 39%. An assessment of the effectiveness of the proposed technical solutions for the likely prevented damage when using the technology of recycling polymer waste PS proves the rationality of the developed method.

Provisions to be defended:

- Substantiation of the composition and parameters of the composite sorbent obtained during the disposal of polymer waste to eliminate the spill of petroleum products.
- The results of evaluating the effectiveness of the resulting composite sorbent.
- Algorithms for obtaining and applying the developed composite sorbent.
- The results of the evaluation of the developed method of recycling polymer waste, with the production of a composite sorbent, according to the likely damage prevented.