

Final

**TEST PLAN FOR  
RECLAIMED PETROLEUM HYDROCARBONS**

**Submitted to the US EPA**

**by**

**The American Petroleum Institute  
Petroleum HPV Testing Group**

**Consortium Registration # 1100997**

Final

**RECLAIMED PETROLEUM HYDROCARBONS TEST PLAN**

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## **PLAIN LANGUAGE SUMMARY**

The high production volume (HPV) substances contained in this test plan are all petroleum hydrocarbon mixtures (oils) that are “recovered” from different processes in petroleum refineries. They are often referred to as slop oils. Some of the oils are skimmed from process waters or wastewater treatment plants and some are recovered from spills or the washing of equipment. Whenever possible, these oils are returned to the refinery to be made into petroleum products. Because the source and composition of the oils varies, the chemical definitions of these substances are very general. Because they are not intentionally manufactured, the slop oils are made up of an almost infinite combination of various petroleum hydrocarbons and water. Consequently, it is not possible to select a single slop oil as representative of all of the possible mixtures that could be described by these CAS numbers. Because all of the hydrocarbon components in these materials are being addressed in other test plans on petroleum-derived products or streams, the Testing Group expects that the overall hazard of any specific slop oil can be predicted based on the stream’s composition and the toxicity characteristics of its petroleum components. The Testing Group is proposing no health or environmental effects testing for this category.

## **DESCRIPTION OF RECLAIMED PETROLEUM HYDROCARBONS CATEGORY**

All of the substances contained in this category are derived from the refining of petroleum crude oils. All crude oils are composed primarily of paraffinic, naphthenic, and aromatic hydrocarbons and are identified based on the predominant proportion of similar hydrocarbon molecules. The refining of crude oil into petroleum products uses distillation as well as chemical treatment, catalysts, and pressure to separate and combine the basic types of hydrocarbon molecules into petroleum “streams” which have the characteristics needed for blending commercial petroleum products.

As is the case for many industrial processes, the refining of petroleum products produces a number of unintentional by products, wastes, and other hydrocarbon-containing process streams that are not typically sold as products. For example, oil is recovered from process water streams by skimming. Catalysts, filters and other materials in contact with oil are washed to recover hydrocarbons. Oil that is spilled and oil from wastewater treatment plants is recovered, and whenever possible, recovered oil is recycled back into the refinery.

The following HPV substances comprise the reclaimed petroleum hydrocarbons category:

### **Hydrocarbons, C<sub>>=20</sub>, petroleum wastes** CASRN 68476-53-9

A complex combination of hydrocarbons produced as waste material from slop oil, sediments, and water. It consists of hydrocarbons having a carbon number predominantly greater than C<sub>20</sub> and boiling above approximately 350°C (662°F).

### **Wastes, petroleum** CASRN 68477-26-9

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The waste products from any petroleum refinery or production process which has been dewatered. It is commonly called slop oil.

**Residues (petroleum), clay-treating filter wash** CASRN 68918-73-0

A complex residuum from the solvent washing of clay-treating filters. It consists predominantly of unsaturated hydrocarbons having carbon numbers predominantly greater than C20 and boiling above approximately 350°C (662°F).

**Fuel oil, residual, wastewater skimmings** CASRN 68956-48-9

The recovered oil obtained by skimming all plant oil-bearing water streams. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C7 through C10.

**Petroleum products, C5-12, reclaimed, wastewater treatment** CASRN 68956-70-7

A complex combination of hydrocarbons recovered in a dilute solution from a wastewater treatment plant. It consists of hydrocarbons having carbon numbers predominantly in the range of C5 through C12.

Because of the variability inherent in the processing of petroleum materials, the definitions developed for the CAS numbers are qualitative in nature, and written in broad, general terms. The definitions often contain ranges of values, with little if any quantitative analytical information or concern for possible compositional overlaps. As a result, the CAS descriptions are not useful in determining the exact composition of any specific reclaimed petroleum substance. Furthermore, because of the qualitative nature of these CAS descriptions, there may be significant compositional overlap between two refinery streams with different CAS numbers.

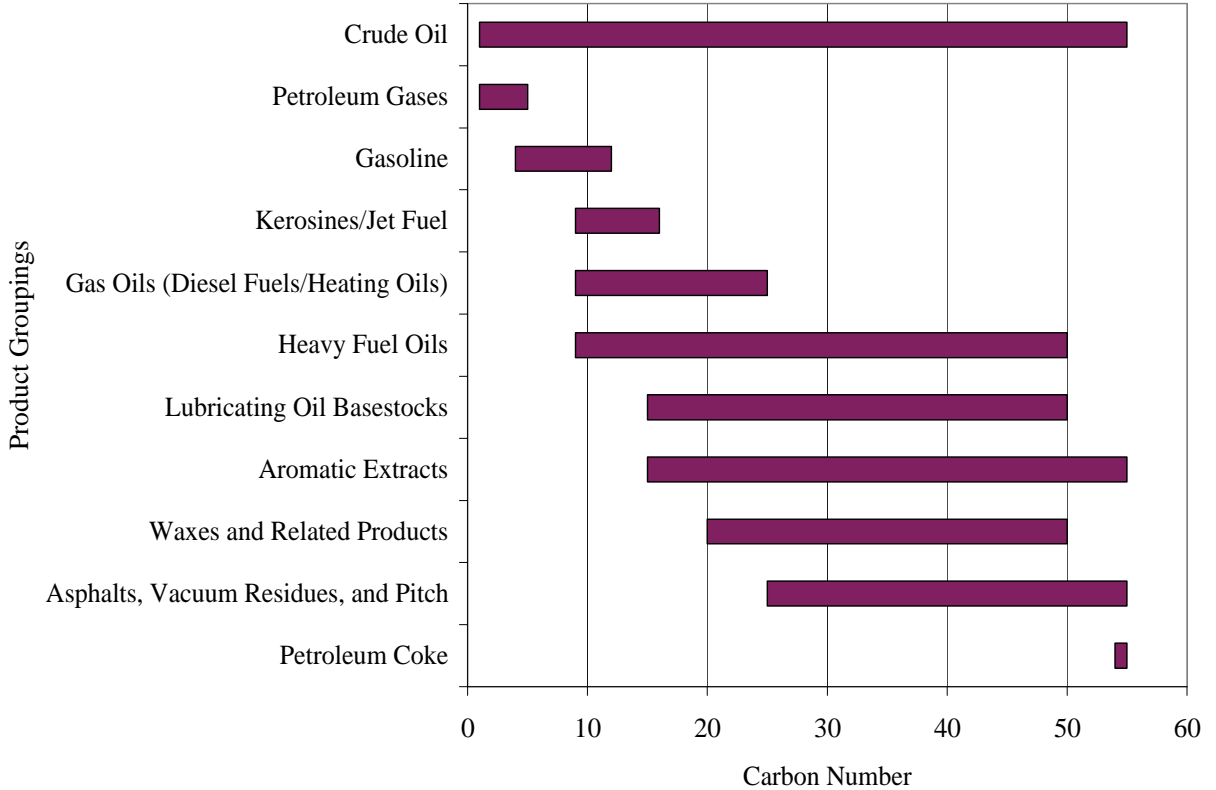
**CATEGORY RATIONALE**

The basis for including these materials in a single category is that they all represent mixtures of hydrocarbons recovered in various phases of petroleum refining. Since none of these materials can be described chemically with any degree of certainty, it is not possible to conduct an assessment of health and environmental hazards that would address all of the possible mixtures that could be described by these CAS numbers. Further, since it is not possible to predict what hydrocarbons might be present in any particular reclaimed oil mixture, there is no “representative” composition of any of these materials that could be proposed as a candidate test material. However, it can be stated that the hydrocarbon species that could possibly be present in these materials are contained in HPV substances that are being addressed in other test plans for petroleum products.

Figure 1 summarizes the petroleum product groupings (categories) for eleven of the test plans being prepared by the Petroleum HPV Chemical Testing Group. The hydrocarbons contained in the reclaimed petroleum substances are all being evaluated in one or more of these test plans. Therefore, the Testing Group believes the potential health and environment effects of the hydrocarbon species that could occur in reclaimed petroleum

hydrocarbons are being addressed in one of the other HPV test plans being developed for petroleum products.

Figure 1.



The Testing Group also thinks the potential for exposure to these materials is very low and confined to persons working in petroleum refineries, since a good portion of these materials are re-introduced into the refinery and become petroleum products. Those that cannot be recycled are disposed of as wastes. In this sense, they could be viewed as isolated intermediates in the production of the petroleum products and streams covered by the other HPV categories.

### **EVALUATION OF EXISTING HEALTH EFFECTS DATA AND PROPOSED TESTING**

As explained above, it is not possible to evaluate the specific health hazards of the substances contained in this category without more precise information on the chemical composition of the specific stream. However, the data being generated in the other petroleum product test plans will provide adequate information to assess the potential hazard of a reclaimed substance, if the chemical composition is known. Therefore no testing is being proposed.

**EVALUATION OF EXISTING PHYSICOCHEMICAL AND ENVIRONMENTAL FATE DATA**

It is not possible to assess the physical properties and potential environmental fate of the substances in this category. However, the data being generated in the other petroleum product test plans will provide adequate information to estimate physicochemical characteristics and environmental fate, if the chemical composition is known. No further testing is proposed.

**EVALUATION OF EXISTING ECOTOXICITY DATA AND PROPOSED TESTING**

It is not possible to evaluate the ecotoxicity of the substances contained in this category without precise information on the chemical composition of the specific stream. However, the data being generated in the other petroleum product test plans will provide adequate information to assess the potential hazard of a reclaimed substance, if the chemical composition is known. Therefore no testing is being proposed.