This invention relates to processes for removing odors from distillates of certain kinds of petroleum or crude oils. Attempts have heretofore been made to remove odors from the distillates of certain kinds of crude oils which have objectionable odors, and which are known as "skunk" oils, such as, for example, as Lima, Venezuela, Mexican and other crude oils. In prior attempts to remove the odors, various materials were added to the crude oil to act on the sulphur compounds in the oil during the distillation process, or vapors were subjected to the action of various materials but these processes either did not succeed in removing the objectionable odors, or, because of the fact that these materials could not be recovered from the residue, the processes were too expensive to be commercially feasible.

These odor are generally believed to be due to the presence of certain sulphur compounds in the distillate, and these compounds are not removed by the means commonly employed for removing sulphur, nor are these compounds eliminated by the distillation process, as is sulphurphorated hydrogen. Because of lack of satisfactory methods for the removal of these odors, distillates from these crude oils are sold at prices lower than those of corresponding distillates of crude oils free from these odors.

The objects of this invention are to provide a process of this kind in accordance with which the distillates of crude oils of the kind referred to may economically and effectively be treated to remove the objectionable odors therefrom; also to provide a process of this kind in which the ingredients used to remove the objectionable odor from the distillates may be removed from the distillates without necessitating a re-distilling of the distillates; also to provide a process of this kind by means of which substances formed in the distillates as a result of removing the odor producing ingredients can be removed by adsorption; also to improve processes of this kind in other respects hereinafter specified.

In accordance with my invention the distillates having the objectionable odors are treated with materials which are relatively insoluble in the distillates, and which have the properties of combining with the sulphur compounds or other ingredient or ingredients of the distillates which cause these odors. These materials are mixed preferably in finely divided form with the distillate to be treated, and if necessary are kept in suspension in or intimate mixture with the distillate by agitation.

These materials upon reacting with the odor producing ingredients, cause either a discoloration of the distillate, or the production of substances in the distillate, which if left in the distillate, would be objected to by purchasers or have a detrimental action on parts of engines or other apparatus or materials in connection with which the distillates may be used.

I have found that in carrying out my process these objectionable substances, whether or not they cause discoloration of the distillate, can be readily removed by adsorption, filtration or both, or, if desired, the distillate may be re-distilled to separate the distillate from the materials used, or from the reaction products formed by the action of the material on the odor producing ingredients. The material used for removing the odors from the distillate may be recovered therefrom by precipitation, centrifuging, filtration, or other means, so as to be available for further treatment of distillates.

In carrying out my process, I have found that metallic cadmium or alloys thereof can be effectively employed for removing the objectionable odors from distillates. This material is preferable in finely divided form, so as to present the maximum surface to reaction with the odor producing ingredients of the distillates.

When the reaction is completed, either with or without light, upon stopping the agitation, the material added to the distillate is allowed to settle, so that it can be readily separated from the distillate and used again, or if desired, treated to remove sulphur compounds or other reaction products therefrom. The discolored distillate can then be quickly restored to a colorless state by mixing with, agitating with, or causing the distillate to flow through suitable adsorptive material, such for example, as fuller's earth, silica gel, etc., and the material may, if desired, also be filtered in any suitable or desired manner. In case the distillate is not discolored by the reaction, it may under some circumstances nevertheless be desirable to subject the same to an adsorbing agent to remove colorless reaction products in the distillate, which may have a detrimental effect on parts of engines or other apparatus or articles with which the distillate may contact.

This treatment of the distillate is inexpensive and very effectively removes color and other reaction products therefrom, so that the resulting distillate is not only free from objectionable odors, but also colorless and free from any ingredients which might have a corrosive or other
injurious action on engines or other devices. If desired, it is, of course, possible to effect a separation of the added materials and reaction products from the distillate by re-distilling.

The process described can be used to advantage before the raw distillate has been subjected to the usual acid-lye-litharge treatment for the purpose of removing sulphur, or if desired, the acid-lye-litharge treatment may be employed after the distillate has been acted on as herein described, in which case the reaction products may be removed by the acid-lye-litharge treatment so that no further treatment, such as adsorption or re-distillation is necessary. It is, of course, also possible to permit the coloring material to remain in the distillate for the purpose of distinguishing the distillate from others.

The process described is inexpensive to carry out and the odor is permanently removed from the distillate, which is not the case with some processes heretofore employed in which the removal of the odor is merely temporary.

I claim:

The process of deodorizing petroleum products which comprises subjecting said products while in liquid phase to intimate mixture with metallic cadmium.

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