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Clark R C, Jr. & Blumer M. Distribution of *n*-paraffins in marine organisms and sediment. *Limnol. Oceanogr.* 12:79-87, 1967.

[Woods Hole Oceanographic Institution, Woods Hole, MA]

The distribution pattern of *n*-paraffin hydrocarbons in intertidal, planktonic, and pelagic algae, and in mixed phyto- and zooplankton, differed markedly from the *n*-paraffin pattern of a recent marine sediment. The differences suggested that *n*-paraffins in surface sediment were not derived from local marine organisms. [The *SCI*® indicates that this paper has been cited in over 140 publications since 1967.]

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"The research that led to this paper actually was conceived in the arena of classic organic geochemistry. We were trying to establish the extent of marine detrital contributions to the formation of petroleum in nearshore sediments.

"The journal containing this article appeared the same month (March 1967) that the Torrey Canyon oil spill occurred off the coast of Great Britain. This latter event focused, for the first time, the attention of the public and of environmental scientists on the potential impacts of major oil spills on marine environments.

"The late Max Blumer (1923-1977), of the Woods Hole Oceanographic Institution, my coauthor and mentor, continued his basic marine organic geochemistry research on

biosynthesized hydrocarbons until 1969, at which time the West Falmouth oil spill occurred. Blumer then applied his sensitive and discriminating analytical chemical techniques to this local oil pollution problem and used his knowledge of marine organic geochemical processes together with his background in petroleum chemistry to interpret the results of this incident. Independently, but simultaneously, I initiated a survey of hydrocarbons in marine biota of the Pacific Northwest as part of the efforts of the US Bureau of Commercial Fisheries (now National Marine Fisheries Service) to address problems associated with increased use of Puget Sound as a major reception, refining, and transshipment center for petroleum.

"This paper, which was essentially my MS thesis at the Massachusetts Institute of Technology, had a profound effect on our future research and careers. Ten years later, the procedures described in the paper were still relevant and useful and the paper was cited in this context in a two-volume review on the effects of petroleum on arctic and subarctic marine environments.¹⁻³ It was also used seminally in a recent review on arctic petroleum impacts.⁴

"One of Blumer's last papers was a major review on aromatic compounds found in nature, which appeared in *Scientific American*.⁵ In recognition of his contributions to the field, the memorial address at a 1978 symposium entitled "Recovery potential of oiled marine northern environments"⁶ was delivered in his honor by Blumer's former postdoctoral student, J.W. Farrington from Woods Hole.

"The coincidental appearance of our paper at the time of the world's largest oil spill plus the applicability of its techniques to the study of uptake of petroleum probably caused this paper to become a key citation in the burgeoning field of fate-and-effect studies of petroleum in the marine environment."

1. Clark R C, Jr. & Brown D W. Petroleum: properties and analyses in biotic and abiotic systems. (Malins D C, ed.) *Effects of petroleum on arctic and subarctic marine environments and organisms*. New York: Academic Press, 1977. Vol. I, p. 1-89.
2. Clark R C, Jr. & MacLeod W D, Jr. Inputs, transport mechanisms, and observed concentrations of petroleum in the marine environment. (Malins D C, ed.) *Effects of petroleum on arctic and subarctic marine environments and organisms*. New York: Academic Press, 1977. Vol. I, p. 91-223.
3. Clark R C, Jr. & Finley J S. Effects of oils spills in arctic and subarctic environments. (Malins D C, ed.) *Effects of petroleum on arctic and subarctic marine environments and organisms*. New York: Academic Press, 1977. Vol. II, p. 411-76.
4. Occurrence and impact of petroleum on arctic environments. (Rey L, ed.) *The Arctic Ocean: the hydrographic environment and fate of pollutants*. London: Macmillan Press, 1982. p. 295-341.
5. Blumer M. Polycyclic aromatic compounds in nature. *Sci. Amer.* 234:34-45, 1976.
6. Recovery potential of oiled marine northern environments. (Whole issue.) *J. Fish. Res. Board Canada* 35(5), 1978. 296 p.