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Goldberg E D, Bowen V T, Farrington J W, Harvey G, Martin J H, Parker P L, Risebrough R W, Robertson W, Schneider E & Gamble E. The Mussel Watch. *Environ. Conserv.* 5:101-25, 1978.

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Some marine bivalves, oysters and mussels, are employed as surveillance organisms for marine pollutants (artificially produced radionuclides, petroleum hydrocarbons, metals, and chlorinated hydrocarbons used industrially and as biocides in coastal waters). Varying degrees of contamination in US coastal waters have been indicated by the elevated levels of these substances in the soft parts of bivalves. [The *SCI*® indicates that this paper has been cited in over 165 publications, making it the most-cited paper from this journal.]

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I have mixed feelings about the overall impact that this presentation has had on the community of environmental scientists. The Mussel Watch strategy has been adopted by many nations and by many international organizations that have utilized it effectively. For instance, unacceptable levels of pollutants have been observed at the New Bedford Harbor area of Buzzards Bay, Massachusetts,¹ where polychlorinated biphenyl concentrations were found to be an order of magnitude higher than those in all other US stations. Such levels indicate that the

health of fish and shellfish eaters may be jeopardized. Also, nonproblems have been identified. For example, some northern California citizens were concerned that artificially produced radionuclides were leaking from containers discharged into the sediments off the Farallon Islands near San Francisco, California, after World War II and were polluting the fish. The results of the US Mussel Watch in 1976-1978 refuted this claim.

Perhaps more important has been the development of an awareness that there are scientists policing marine waters inhabited by bivalves. Thus, potential polluters are discouraged from discharging toxic materials into the coastal zone.

On the other hand, the ease with which the Mussel Watch concept can be carried out has spawned a large number of programs, many of which do not identify or solve problems but produce a large amount of data of no relevance to environmental quality. Once started, Mussel Watch activities seem to go on and on.

For example, with respect to artificial radionuclide and metal contamination, the frequency of monitoring need not be yearly but once every few years for the given site, based on the initial US program.² Yet many programs have been carried out yearly. Metals for which there is no evidence of any potential pollution problem are often analyzed.

On balance, I suspect that the positive aspects of the Mussel Watch concept outweigh the negative ones. But the latter were totally unexpected during the formative years.

1. Farrington J W, Goldberg E D, Risebrough R W, Martin J H & Bowen V T. U.S. "Mussel Watch" 1976-1978: an overview of the trace-metal, DDE, PCB, hydrocarbon, and artificial radionuclide data. *Environ. Sci. Technol.* 17:490-6, 1983. (Cited 30 times.)
2. Goldberg E D, Koide M, Hodge V, Flegal A R & Martin J. U.S. Mussel Watch: 1977-1978 results on trace metals and radionuclides. *Estuar. Coast. Shelf Sci.* 16:69-93, 1983. (Cited 30 times.)

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