

Early in the development of the allowable levels for PAHs in seafood in the wake of the BP Oil Spill, the FDA considered setting levels based on a combined seafood diet rather than evaluating individual seafood items separately. See table below which was included in correspondence between FDA staff as part of an early draft of the Re-opening Protocol.

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Table 1

Criteria for Re-opening Areas Closed from Oil Spills Based on 160 g/day Seafood Consumption and Concentrations of Chemical Contaminants in Seafood		
Chemical ¹	Level of Concern (ppm)	Basis ²
Napthalene	20	EPA RfD; 70 kg bw; 160 g/day consumption
Fluorene	20	EPA RfD; 70 kg bw; 160 g/day consumption
Anthracene/phenanthrene	150	EPA RfD; 70 kg bw; 160 g/day consumption
Fluoranthene	0.15	10 ⁻⁶ Cancer risk estimate = 0.02B(a)P equivalency
Pyrene	0.025	10 ⁻⁶ Cancer risk estimate = 0.13B(a)P equivalency
Benz(a)anthracene	0.2	10 ⁻⁶ Cancer risk estimate = 0.014B(a)P equivalency
Chrysene	0.25	10 ⁻⁶ Cancer risk estimate = 0.013B(a)P equivalency
Benzo(a)pyrene	0.003	10 ⁻⁶ Cancer risk estimate = (34ng/p/d)/(70/5yr)/160 g seafood/p/d

¹ Includes alkylated homologues, specifically C-1, C-2, C-3, C-4 naphthalenes; C-1, C-2, C-3 fluorenes; C-1, C-2, C-3 anthracenes/phenanthracenes; C-1, C-2 pyrenes

² With respect to the Basis:

RfD based criteria:	RfD
Napthalene:	(0.04 mg/kg/d x 70kg)/0.16kg = 17.5 mg/kg or 20 ppm
Fluorene:	(0.04 mg/kg/d x 70kg)/0.16kg = 17.5 mg/kg or 20 ppm
Anthracene:	(0.30 mg/kg/d x 70kg)/0.16kg = 131 mg/kg or 150 ppm

Criteria for 2- and 3-ring compounds are based on US EPA Reference Doses (RfDs) and the US EPA consumption estimate for a maximally exposed individual. Seafood consumption rate of 0.12 kg taken from the 2-day average 90th percentile intake level of all seafood (NHANES 2005-2006). Consumption levels for all species is considered to be appropriate because a) consumption information on individual species is often limited and not sufficient for detrimed high end intake levels, b) in those circumstance where the 90th percentile can be ascertained for individual species (e.g. shrimp), the estimates are close to that obtained for seafood overall, and c) many consumers eat different species of fish. Alkylated homologues assumed to have similar toxicities to the parent compound. Anthracene and phenanthracene were combined because routine chemical analysis does not distinguish between the analogues of these two compounds.