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## **Radioisotopes in Fish Caught in Alaskan Waters**

**Fish Samples collected: 2014-2021**

**Concentration in Bacquerel per kilogram (Bq/kg) wet weight**

**ND = Non-detect**

### **Summary:**

Beginning in 2014, the Alaska Department of Environmental Conservation, Division of Environmental Health, in collaboration with the Department of Health and Social Services and the FDA has tested fish samples collected in Alaskan waters for cesium-134, cesium-137 and iodine-131 radioisotopes. The Fish Monitoring Program developed the sampling plan for this project in order to collect relevant species from important fishery areas around the State. All samples tested by the FDA through 6 August, 2021 resulted in non-detects. Samples consist mostly of composites made using multiple individuals of the same species. Some individual fish were analyzed as well. For more information, contact the Fish Monitoring Program.

**For more information visit the DEC Fukushima Radiation Concerns in Alaska webpage:**  
<https://dec.alaska.gov/eh/radiation.aspx>

**Also visit the Fish Monitoring Program webpage:**  
<http://www.dec.alaska.gov/eh/vet/fish-monitoring-program>

**For State of Alaska fish consumption recommendations visit:**  
<http://www.dhss.alaska.gov/dph/Epi/eph/Pages/fish/default.aspx>

Table 1: Alaska fish radiation test results

Region	Species	CollectionDate	Year	Iodine-131	Cesium-134	Cesium-137	Minimum Detection Conc.		
							I-131	Cs-134	Cs-137
Southeast	Chum Salmon	2021-09-09	2021	NA	ND	ND	NA	3.07	2.93
Southeast	Sockeye Salmon	2021-09-09	2021	NA	ND	ND	NA	3.10	2.94
Gulf of Alaska	Chum Salmon	2021-08-06	2021	NA	ND	ND	NA	3.82	3.59
Gulf of Alaska	Pink Salmon	2021-08-06	2021	NA	ND	ND	NA	3.04	2.89
Gulf of Alaska	Sockeye Salmon	2021-08-06	2021	NA	ND	ND	NA	3.03	2.88
Gulf of Alaska	Sockeye Salmon	2021-08-06	2021	NA	ND	ND	NA	3.06	2.90
AI-BS	Pollock	2021-08-03	2021	NA	ND	ND	NA	3.02	2.89
AI-BS	Herring	2021-07-13	2021	NA	ND	ND	NA	3.90	3.63
Southeast	Chum Salmon	2021-06-30	2021	NA	ND	ND	NA	3.03	2.92
Gulf of Alaska	Rockfish	2021-06-27	2021	NA	ND	ND	NA	3.07	2.94
AI-BS	Sockeye Salmon	2021-06-18	2021	NA	ND	ND	NA	3.04	2.92
Gulf of Alaska	Pacific Cod	2021-06-18	2021	NA	ND	ND	NA	3.06	2.93
Gulf of Alaska	Chinook Salmon	2021-06-17	2021	NA	ND	ND	NA	3.04	2.90
Gulf of Alaska	Sockeye Salmon	2021-06-17	2021	NA	ND	ND	NA	2.98	2.85
Southeast	Sablefish	2021-05-13	2021	NA	ND	ND	NA	3.03	2.87
AI-BS	Opilio Crab	2021-04-19	2021	NA	ND	ND	NA	2.34	1.84
AI-BS	Pollock	2021-03-26	2021	NA	ND	ND	NA	3.75	3.57
Southeast	Herring	2021-03-22	2021	NA	ND	ND	NA	2.93	2.83
Southeast	Halibut	2020-09-17	2020	NA	ND	ND	NA	3.06	2.86
Southeast	Pink Salmon	2020-09-14	2020	NA	ND	ND	NA	3.03	2.85

Table 1: Alaska fish radiation test results (*continued*)

Region	Species	CollectionDate	Year	Iodine-131	Cesium-134	Cesium-137	Minimum Detection Conc.		
							I-131	Cs-134	Cs-137
Bristol Bay	Coho Salmon	2020-08-18	2020	NA	ND	ND	NA	3.70	3.49
Southeast	Herring	2020-07-27	2020	NA	ND	ND	NA	3.18	2.90
Gulf of Alaska	Halibut	2020-06-09	2020	NA	ND	ND	NA	3.03	2.83
Bristol Bay	Sockeye Salmon	2020-03-07	2020	NA	ND	ND	NA	3.22	2.87
AI-BS	Pollock	2020-03-03	2020	NA	ND	ND	NA	3.57	2.86
Southeast	Pink Salmon	2019-08-27	2019	NA	ND	ND	NA	3.00	2.87
Southeast	Coho Salmon	2019-08-07	2019	NA	ND	ND	NA	2.96	2.87
AI-BS	Pollock	2019-08-04	2019	NA	ND	ND	NA	3.77	3.58
Bristol Bay	Sockeye Salmon	2019-07-02	2019	NA	ND	ND	NA	2.70	2.85
AI-BS	Halibut	2019-04-17	2019	NA	ND	ND	NA	3.00	2.85
Southeast	Herring	2019-03-21	2019	NA	ND	ND	NA	3.69	3.55
Southeast	Halibut	2018-11-08	2018	NA	ND	ND	NA	2.92	2.83
AI-BS	Herring	2018-09-04	2018	NA	NA	NA	NA	NA	NA
Southeast	Halibut	2018-08-28	2018	NA	ND	ND	NA	2.97	2.85
Gulf of Alaska	Pacific Cod	2018-08-21	2018	NA	ND	ND	NA	3.76	3.51
Bristol Bay	Coho Salmon	2018-08-16	2018	NA	ND	ND	NA	2.96	2.80
Gulf of Alaska	Coho Salmon	2018-08-09	2018	NA	ND	ND	NA	3.75	3.53
Gulf of Alaska	Sockeye Salmon	2018-08-09	2018	NA	ND	ND	NA	3.73	3.54
Bristol Bay	Sockeye Salmon	2018-08-08	2018	NA	ND	ND	NA	3.72	3.45
Southeast	Coho Salmon	2018-07-26	2018	NA	ND	ND	NA	3.77	3.55
AI-BS	Pollock	2018-07-19	2018	NA	ND	ND	NA	3.74	3.50
AI-BS	Halibut	2018-07-17	2018	NA	ND	ND	NA	3.72	3.55

Table 1: Alaska fish radiation test results (*continued*)

Region	Species	CollectionDate	Year	Iodine-131	Cesium-134	Cesium-137	Minimum Detection Conc.		
							I-131	Cs-134	Cs-137
AI-BS	Pollock	2018-07-17	2018	NA	ND	ND	NA	3.76	3.53
Southeast	Herring	2018-03-28	2018	NA	ND	ND	NA	2.72	2.67
AI-BS	Pollock	2018-03-01	2018	NA	ND	ND	NA	3.50	3.34
AI-BS	Herring	2017-07-20	2017	NA	ND	ND	NA	2.87	2.68
Bristol Bay	Sockeye Salmon	2017-07-09	2017	NA	ND	ND	NA	2.95	2.79
Gulf of Alaska	Chinook Salmon	2017-06-15	2017	NA	ND	ND	NA	3.77	3.42
Gulf of Alaska	Sockeye Salmon	2017-06-15	2017	NA	ND	ND	NA	2.62	2.73
Southeast	Halibut	2017-06-13	2017	NA	ND	ND	NA	3.72	3.39
Gulf of Alaska	Pollock	2017-05-26	2017	NA	ND	ND	NA	3.76	3.43
Gulf of Alaska	Chum Salmon	2017-05-18	2017	NA	ND	ND	NA	2.99	2.73
AI-BS	Halibut	2017-05-07	2017	NA	ND	ND	NA	3.04	2.74
AI-BS	Pacific Cod	2017-03-06	2017	NA	ND	ND	NA	3.56	3.39
AI-BS	Pacific Cod	2017-03-06	2017	NA	ND	ND	NA	3.59	3.43
AI-BS	Pollock	2017-03-06	2017	NA	ND	ND	NA	3.49	3.35
AI-BS	Pollock	2017-03-06	2017	NA	ND	ND	NA	3.58	3.41
AI-BS	Pollock	2016-09-08	2016	ND	ND	ND	11.70	3.10	3.30
AI-BS	Pacific Cod	2016-08-25	2016	ND	ND	ND	46.50	3.20	3.00
AI-BS	Halibut	2016-08-03	2016	ND	ND	ND	41.84	2.13	1.87
AI-BS	Halibut	2016-08-03	2016	ND	ND	ND	35.29	1.66	1.41
AI-BS	Pollock	2016-07-12	2016	ND	ND	ND	253.20	2.00	1.58
Bristol Bay	Chinook Salmon	2016-07-11	2016	ND	ND	ND	210.70	1.67	1.27
Bristol Bay	Sockeye Salmon	2016-07-11	2016	ND	ND	ND	231.50	1.56	1.41
Gulf of Alaska	Halibut	2016-06-03	2016	NA	ND	ND	NA	3.49	3.03

Table 1: Alaska fish radiation test results (*continued*)

Region	Species	CollectionDate	Year	Iodine-131	Cesium-134	Cesium-137	Minimum Detection Conc.		
							I-131	Cs-134	Cs-137
Gulf of Alaska	Chinook Salmon	2016-05-25	2016	NA	ND	ND	NA	3.51	3.06
Southeast	Herring	2016-03-24	2016	ND	ND	ND	8.81	2.28	1.93
AI-BS	Pollock	2016-03-22	2016	ND	ND	ND	8.31	2.07	1.99
Southeast	Herring	2016-03-21	2016	ND	ND	ND	12.17	2.17	1.99
Southeast	Herring	2016-03-18	2016	ND	ND	ND	14.52	1.74	1.58
AI-BS	Pacific Cod	2016-02-26	2016	ND	ND	ND	5.94	2.22	1.93
AI-BS	Pollock	2016-02-25	2016	ND	ND	ND	4.94	1.89	1.44
Gulf of Alaska	Pollock	2016-02-23	2016	ND	ND	ND	6.90	2.13	1.79
AI-BS	Cod	NA	2015	ND	ND	ND	24.20	2.10	1.91
AI-BS	Cod	NA	2015	ND	ND	ND	24.37	1.85	1.72
AI-BS	Halibut	NA	2015	ND	ND	ND	2.10	2.11	1.76
AI-BS	Pollock	NA	2015	ND	ND	ND	1.89	2.04	1.72
AI-BS	Pollock	NA	2015	ND	ND	ND	4.21	1.71	1.79
AI-BS	Sablefish	NA	2015	ND	ND	ND	6.78	2.14	1.79
Bristol Bay	Sockeye Salmon	NA	2015	ND	ND	ND	4.97	1.91	1.63
Bristol Bay	Sockeye Salmon	NA	2015	ND	ND	ND	4.86	2.05	1.85
Bristol Bay	Sockeye Salmon	NA	2015	ND	ND	ND	5.30	2.24	2.01
Gulf of Alaska	Chinook Salmon	NA	2015	ND	ND	ND	3.69	2.12	1.97
Gulf of Alaska	Chum Salmon	NA	2015	ND	ND	ND	30.75	2.76	2.41
Gulf of Alaska	Halibut	NA	2015	ND	ND	ND	3.20	2.11	1.80
Gulf of Alaska	Halibut	NA	2015	ND	ND	ND	2.36	1.97	1.96
Gulf of Alaska	Pollock	NA	2015	ND	ND	ND	5.45	2.27	2.10
Gulf of Alaska	Pollock	NA	2015	ND	ND	ND	8.01	2.77	2.43
Gulf of Alaska	Pollock	NA	2015	ND	ND	ND	5.12	2.26	1.80
Gulf of Alaska	Sablefish	NA	2015	ND	ND	ND	6.54	2.04	2.10

Table 1: Alaska fish radiation test results (*continued*)

Region	Species	CollectionDate	Year	Iodine-131	Cesium-134	Cesium-137	Minimum Detection Conc.		
							I-131	Cs-134	Cs-137
Southeast	Coho Salmon	NA	2015	ND	ND	ND	5.07	1.88	1.82
Southeast	Halibut	NA	2015	ND	ND	ND	8.15	2.14	1.88
Southeast	Halibut	NA	2015	ND	ND	ND	8.30	1.96	1.85
Southeast	Herring	NA	2015	ND	ND	ND	3.17	2.28	1.91
Southeast	Herring	NA	2015	ND	ND	ND	3.45	2.63	2.05
Southeast	Herring	NA	2015	ND	ND	ND	3.00	1.88	1.44
Southeast	Sablefish	NA	2015	ND	ND	ND	8.37	1.72	1.82
AI-BS	Cod	NA	2014	ND	ND	ND	3.71	2.42	1.98
AI-BS	Halibut	NA	2014	ND	ND	ND	3.00	1.93	1.82
AI-BS	Pollock	NA	2014	ND	ND	ND	3.55	2.12	2.06
AI-BS	Pollock	NA	2014	ND	ND	ND	3.86	2.56	1.97
AI-BS	Pollock	NA	2014	ND	ND	ND	6.13	2.00	2.01
Bristol Bay	Chinook Salmon	NA	2014	ND	ND	ND	3.71	2.08	1.88
Bristol Bay	Sockeye Salmon	NA	2014	ND	ND	ND	3.39	1.92	1.64
Gulf of Alaska	Chum Salmon	NA	2014	ND	ND	ND	5.97	2.23	1.76
Gulf of Alaska	Chum Salmon	NA	2014	ND	ND	ND	5.29	1.88	1.72
Gulf of Alaska	Halibut	NA	2014	ND	ND	ND	2.67	2.13	1.94
Gulf of Alaska	Halibut	NA	2014	ND	ND	ND	2.34	1.75	1.51
Gulf of Alaska	Pollock	NA	2014	ND	ND	ND	3.41	1.88	1.77
Gulf of Alaska	Pollock	NA	2014	ND	ND	ND	5.92	2.07	1.74
Gulf of Alaska	Sablefish	NA	2014	ND	ND	ND	2.11	1.96	1.68
Gulf of Alaska	Sablefish	NA	2014	ND	ND	ND	2.72	2.31	1.86
Southeast	Chinook Salmon	NA	2014	ND	ND	ND	5.05	1.80	1.79
Southeast	Chum Salmon	NA	2014	ND	ND	ND	9.99	1.80	1.40
Southeast	Halibut	NA	2014	ND	ND	ND	3.31	1.81	1.67

Table 1: Alaska fish radiation test results (*continued*)

Region	Species	CollectionDate	Year	Iodine-131	Cesium-134	Cesium-137	Minimum Detection Conc.		
							I-131	Cs-134	Cs-137
Southeast	Halibut	NA	2014	ND	ND	ND	6.07	1.94	1.91
Southeast	Pink Salmon	NA	2014	ND	ND	ND	10.61	2.08	2.05

*Note:*

Results reported in Becquerel per kilogram (Bq/kg)

I-131 testing was discontinued after 2016 due to its short half-life

DIL = Derived Intervention Levels, used by FDA to determine safety concern. For Cs-134 + Cs-137 DIL = 1,200 Bq/kg

ND = not detected at Minimum Detection Concentration (MDC)

AI-BS = Aleutian Islands/Bering Sea

Table 2: Number of Samples Tested by Species

<b>Species</b>	<b>n</b>
Chinook Salmon	7
Chum Salmon	8
Cod	3
Coho Salmon	6
Halibut	21
Herring	13
Opilio Crab	1
Pacific Cod	6
Pink Salmon	4
Pollock	25
Rockfish	1
Sablefish	6
Sockeye Salmon	16

Table 3: Number of Samples Tested by Region

<b>Region</b>	<b>n</b>
AI-BS	38
Bristol Bay	13
Gulf of Alaska	35
Southeast	31

Table 4: Number of Samples Tested by Year

<b>Year</b>	<b>n</b>
2014	20
2015	24
2016	16
2017	12
2018	14
2019	6
2020	7
2021	18