ANNEX B.

EPIC DATABASE

“RADIATION EFFECTS ON AQUATIC ORGANISMS”

(RUSSIAN/FSU DATA)

RADIATION EFFECTS ON AQUATIC ORGANISMS (RELEVANT TO NORTHERN AREAS, RUSSIAN DATA), CHRONIC AND ACUTE EXPOSURE. Effect codes: NE-no effect; REPR-effect on reproduction;MT-effect on mortality;MB-effect on morbidity; AD-adaptation to radiation; STIM- stimulation. (*) -preliminary dose estimates made by the authors of the database.

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A1-1	Fish	*Cyprinus carpio.* Carp (1 year old)	Aquarium experiment, chronic exposure from Sr-90. Test: phagocytic activity of leucocytes on experimental infection with bacteria. Exposure 15 days	Sr-90	1,85E+03	1,85E+05 (bones, equilibrium) (*)	3,3E-05 (kidney)	2,0E-04 (kidney)	Phagocytic response of leucocytes on infection did not differ from the response in the control.Control response: maximum number of fagocyting leucocytes was 28% 1.5 hours after infection.	NE	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983
A1-2	Fish	*Cyprinus carpio.* Carp (1 year old)	Aquarium experiment, chronic exposure from Sr-90. Test: phagocytic activity of leucocytes on experimental infection with bacteria. Exposure 30 days	Sr-90	1,85E+03	1,85E+05 (bones, equilibrium) (*)	8,0E-05 (kidney)	1,2E-3 (kidney)	The overall response on infection was lower than in the control, maximum phagocytic activity was 17% one hour after infection (control - 28%).	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983
A1-3	Fish	*Cyprinus carpio.* Carp (1 year old)	Aquarium experiment, chronic exposure from Sr-90. Test:	Sr-90	1,85E+03	1,85E+05 (bones, equilibrium) (*)	8,9E-4 (kidney)	4,2E-02 (kidney)	The overall response on infection was lower than in the control, maximum phagocytic activity was 17-18% during the 2nd hour after infection (control - 28%).	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			phagocytic activity of leucocytes on experimental infection with bacteria Aeromonas punctata. Radiation exposure 90 days								Shekhanova,1983
A1-4	Fish	*Cyprinus carpio.* Carp (1 year old)	Aquarium experiment, chronic exposure from Sr-90. Test: phagocytic activity of leucocytes on experimental infection with bacteria Aeromonas punctata. Radiation exposure 180 days	Sr-90	1,85E+03	1,85E+05 (bones, equilibrium) (*)	6,9E-4 (kidney)	0,2 (kidney)	The response on infection was more active than in the control, maximum phagocytic activity was 32% in 1.5 hours after infection (control - 28%).	AD	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983
A2-1	Fish	*Cyprinus carpio.* Carp (1 year old)	Aquarium experiment, chronic exposure from Sr-90. Test: phagocytic activity of leucocytes on experimental	Sr-90	3,70E+04	3,7E+06 (bones) (equilibrium *)	2,7E-03 (kidney)	1,9E-02 (kidney)	The overall response on infection was lower than in the control, maximum phagocytic activity was 17% one hour after infection (control - 28%).	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			infection with bacteria Aeromonas punctata. Radiation exposure 15 days								
A2-2	Fish	*Cyprinus carpio.* Carp (1 year old)	Aquarium experiment, chronic exposure from Sr-90. Test: phagocytic activity of leucocytes on experimental infection with bacteria Aeromonas punctata. Radiation exposure 30 days	Sr-90	3,70E+04	3,7E+06 (bones) (equilibrium *)	6,6E-03 (kidney)	8,2E-02 (kidney)	The overall response on infection was lower than in the control, maximum phagocytic activity was 15% one hour after infection (control - 28%).	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983
A2-3	Fish	*Cyprinus carpio.* Carp (1 year old)	Aquarium experiment, chronic exposure from Sr-90. Test: phagocytic activity of leucocytes on experimental infection with bacteria Aeromonas punctata.	Sr-90	3,70E+04	3,7E+06 (bones) (equilibrium *)	1,5E-02 (kidney)	0,7 (kidney)	The overall response on infection was lower than in the control, maximum phagocytic activity was 20% one hour after infection (control - 28%).	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			Radiation exposure 90 days								
A2-4	Fish	*Cyprinus carpio.* Carp (1 year old)	Aquarium experiment, chronic exposure from Sr-90. Test: phagocytic activity of leucocytes on experimental infection with bacteria Aeromonas punctata. Radiation exposure 180 days	Sr-90	3,70E+04	3,7E+06 (bones) (equilibrium *)	2,9E-02 (kidney)	2,75 (kidney)	The overall response on infection was lower than in the control, maximum phagocytic activity was 17-18% in the period 1-1.5 hours after infection (control - 28%).	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983
A3	Fish	*Cyprinus carpio*. Carp (1 year old)	Aquarium experiment, chronic exposure from Sr-90. Test: antibody production on repeated immunization with bacterial antigen (by the reaction of agglutination). Radiation exposure 90 days	Sr-90	1,85E+03	1,85E+05 (bones) (equilibrium *)	0,001 (kidney)	0,04 (kidney)	Weakening of immune activity: delay and reduction of antibody production on immunization with bacterial antigen. Agglutinins appeared on 21st day (2 weeks later than in the control). Maximal titers of agglutinins (1:640 - 1:1260) were detected on 52-60 days, i.e. the peak of response was about 2 times lower and delayed comparing with the control response.Control response: antibodies appeared on the 7th day after immunization, maximum titer of agglutinins (1:2670) was detected on 36-th day.	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983
A4	Fish	*Cyprinus*	Aquarium	Sr-90	3,70E+04	3,7E+06	0,015	0,7	Weakening of immune activity: delay	MB	Shleifer &

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
		carpio. Carp (1 year old)	experiment, chronic exposure from Sr-90. Test: antibody production on repeated immunization with bacterial antigen (by the reaction of agglutination). Radiation exposure 90 days			(bones) (equilibrium *)	(kidney)	(kidney)	and reduction of antibody production on immunization with bacterial antigen. Agglutinins appeared on 21st day (2 weeks later than in the control). Maximal titers of agglutinins (1:173 - 1:1280) were detected on 66-80 days, these titers were about 2 times lower and 1-1.5 months delayed the control response. Control response: antibodies appeared on the 7th day after immunization, maximum titer of agglutinins (1:2670) was detected on 36-th day.		Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983
A5-1	Fish	*Cyprinus carpio* Carp	Aquarium experiment, chronic exposure, 30 days. Test: bacteriostatic properties of blood serum	Sr-90	1,85E+03	37000 (bones, reconstruction)	8,0E-05 (kidney)	1,20E-03	Stimulation of bacteriostatic properties of blood serum during the first 30 days of radiation exposure.	STIM	Shleifer & Shekhanova, 1977,1980; reviewed in Shekhanova,1983 (p.111)
A5-2	Fish	*Cyprinus carpio*. Carp (1 year old)	Aquarium experiment, chronic exposure, 180 days. Test: bacteriostatic properties of blood serum.	Sr-90	1,85E+03	3.7E+4 (*)	0,0009 (kidney)	from 1,2E-03 to 0,2	No differences with the control in bacteriostatic properties of blood serum in the period from 30 up to 180 days of radiation exposure.	NE	Shleifer & Shekhanova, 1977,1980; reviewed in Shekhanova,1983 (p.111)
A5-3	Fish	*Cyprinus carpio*. Carp (1 year old)	Aquarium experiment, chronic exposure, 270 days. Test:	Sr-90	1,85E+03	3,7E+4 (bones, *)	0,0007 (kidney)	0,2-0,34	Gradual deterioration of bacteriostatic properties of blood serum at doses greater than 0.2 Gy. At the end of experiment the bacteriostatic activity was 80-85 % lower than the control	MB	Shleifer & Shekhanova, 1977, 1980; reviewed in Shekhanova,1983 (p.111)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			bacteriostatic properties of blood serum.								
A6-1	Fish	*Cyprinus carpio*. Carp (1 year old)	Aquarium experiment, chronic exposure, 15 days. Test: bacteriostatic properties of blood serum.	Sr-90	3,70E+04	3700000 (bones, *)	0,003 (kidney)	0,02	Stimulation of bacteriostatic properties of blood serum during the first 15 days of radiation exposure.	STIM	Shleifer & Shekhanova, 1977, 1980; reviewed in Shekhanova,1983 (p.111-112)
A6-2	Fish	*Cyprinus carpio*. Carp (1 year old)	Aquarium experiment, chronic exposure, 150 days. Test: bacteriostatic properties of blood serum	Sr-90	3,70E+04	3,70E+06	0,02 (kidney)	0,02-0,5	No differences with the control in bacteriostatic properties of blood serum in the period from 15 up to 150 days of radiation exposure.	NE	Shleifer & Shekhanova, 1977, 1980; reviewed in Shekhanova,1983 (p.111)
A6-3	Fish	*Cyprinus carpio*. Carp (1 year old)	Aquarium experiment, chronic exposure, 270 days. Test: bacteriostatic properties of blood serum	Sr-90	3,70E+04	3700000 (bones, *)	0,03 (kidney)	0,5-5,3	Gradual deterioration of bacteriostatic properties of blood serum at doses greater than 0.5 Gy. At the end of experiment the bacteriostatic activity was 80-85 % lower than the control	MB	Shleifer & Shekhanova, 1977, 1980; reviewed in Shekhanova,1983 (p.111)
A7	Fish	*Misgurnus fossilis* Loach (adult)	Aquarium experiment, chronic exposure, 90 days	Sr-90	1,85E+03	3,7E+04 (bones, *)	2E-03 (preliminary estimation)	0,04 (0,2 reconstruction)	Negative biochemical changes in gonads of males. Reduction to zero of the glycogen concentration in gonads (control glicogen concentration 5-7 mg/gramm of gonads). Fatty testicles (up to 95 mg/g with a control of 26 mg/g). No similar effects were observed in females.	MB	Shekhanova,Belmakov, Lapin,1969; reviewed in Shekhanova,1983 (p.114)
A8	Fish	Misgurnus	Aquarium	Sr-90	3,70E+04	3,7E+06	8E-03	0,7	Negative biochemical changes in	MB	Shekhanova,Belma

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
		fossilis Loach (adult)	experiment, chronic exposure, 90 days			(bones) (equilibrium *)	(preliminary estimation)		testicles of males. Reduction to zero of the glycogen concentration in gonads (control glicogen concentration 5-7 mg/gramm of gonads). Fatty testicles (up to 127 mg/g with a control of 26 mg/g).		kov, Lapin,1969; reviewed in Shekhanova,1983 (p.114)
A9	Fish	Cyprinus carpio Carp (1 year old)	Aquarium experiment, chronic exposure, 360 days	Sr-90	(3,7-7,4)E+02	(3,7-7,4)E+04 (bones, *)	0,003 (liver) 0,0015 (muscles)	1 (liver); 0.5 (muscles)	Negative biochemical changes in the liver and muscles: increasing concentration of lipidoperoxides.Concentration of lipoperoxides in exposed fish: liver 18.98± 0.81 nMole/mg of lipids (control 5.9±0.8 nMole/mg of lipids);Muscles 15.94± 1.43 nMole/mg of lipids (control 3.48±0.85 nMole/mg of lipids)	MB	Storozhuk & Shekhanova, 1977; reviewed in Shekhanova,1983 (p.114)
A10	Fish	Ctenopharyngodon idella. Grass carp (fry)	Aquarium experiment, chronic exposure, 90 days	Sr-90	4,07E+04	4070000 (*)	0,03 (eye)	>1,5 (eye)	Pathological deterioration of eyesight. Effect was observed since 50-th day of experiment. Edema of crystalline lens and retina of the eye, dystrophic degeneration of the crystalline substance, disturbance of the structure of photoreceptors.	MB	Nilov, Fedoseenko, Shekhanova,1976; reviewed in Shekhanova,1983
A11	Fish	*Rutilus rutilus* Roach	Water reservoir contaminated from industrial activity of PA Mayak, southern Urals. Field study of 1971-1975 (N about 1500).	Sr-90,Cs-137	(5,9-7,4)E+03 (^{90}Sr); (144-925) (^{137}Cs)	1,5E+06 (^{90}Sr in bones, d.w.); 1,6E+04 (^{90}Sr in muscles); 1,4E+04 (90Sr in gonads); 7,8E+04 (137Cs in muscles,	7E-03 (internal); 1,5E-02 (bones); 0,0048 (external)	4,4 (per year, (*))	Fertility of roach decreased almost by a factor of 2 as compared to roach from the control water body. Spawning occured later than in the control. There were no fish older than 9 years in the spawning shoal. Gonads had normal structure, but the number of sexual cells was lower than the norm. The growth of fish did not differ from the control.	REPR	Peshkov et.al., 1978

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
						w.w.)					
A12	Fish	*Carassius auratus gibelio* Goldfish	Lake (presumably Berdenish), contaminated in 1957 (Kyshtym accident), southern Urals. Field studies of 1970s.	Sr-90,Cs-137	1,17E+03 (^{90}Sr)	(5.6-11)E+04 (bones)	5,00E-04	0,2 (Gy per year, (*))	No specimens older than 8 years were present in the catches, which is not typical of the given species. Grown-up 4-7 year old specimens dominated. Morphological anomalies were observed in 24 % of the fish examined. For the most part, these were specimens with unpaired gonads, 17-28 % of these specimens were sterile.	REPR	Voronina E.A., Peshkov S.P., I.A. Shekhanova,1977; Kryshev, 2002 (doses)
A13	Fish	*Carassius auratus gibelio Goldfish*	Lake (presumably Uruskul), contaminated in 1957 (Kyshtym accident), southern Urals. Field studies of 1970s.	Sr-90,Cs-137	1,48E+03	(3,7-5,5)E+05 (bones)	(3,0-5,0)E-03	1,1-1,8 (Gy per year, (*))	No specimens older than 8 years were present in the catches, which is not typical of the given species. Specimens of 4-6 years of age dominated in the spawning shoal	MT	Voronina E.A., Peshkov S.P., I.A. Shekhanova,1977; Kryshev, 2002 (doses)
A14	Fish	*Carassius auratus gibelio Goldfish*	Lake (presumably Uruskul), contaminated in 1957 (Kyshtym accident), southern Urals. Field studies of 1972-1975.	Sr-90,Cs-137	1,50E+03	(3,7-5,5)E+05	(3,0-5,0)E-03	1,1-1,8 (Gy per year, (*))	Morphological anomalies were observed in 15 % of the fish. These were mainly anomalies of gonad structure (unpaired gonads, sterility).	REPR	Voronina E.A., Peshkov S.P., I.A. Shekhanova,1977
A15	Fish	*Rutilus rutilus Roach*	Water reservoir contaminated from industrial activity of PA	Sr-90,Cs-137	(5,9-7,4)E+03 (^{90}Sr); (144-925) (^{137}Cs)	1,5E+06 (^{90}Sr in bones, d.w.); 1,6E+04	7E-03 (internal); 1,5E-02 (bones); 0,0048	4,4 (Gy per year, (*))	Morphological anomalies were observed in 6-9 % of the grown-up fish, including 0.5-2.0 % with underdeveloped gonads or signs of hermaphroditism. In the control there	REPR	Ermokhin, Muntian, 1977

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			Mayak, southern Urals. Field study of 1971-1975 (N about 1500).			(^{90}Sr in muscles); 1,4E+04 (90Sr in gonads); 7,8E+04 (137Cs in muscles, w.w.)	(external)		were 0.5-1 % of the fish with morphological anomalies.		
A16	Fish	*Carassius auratus gibelio Goldfish*	Lake (presumably Berdenish), contaminated in 1957 (Kyshtym accident), southern Urals. Field studies of 1972-1975.	Sr-90	1,20E+03	(9.6±0.4) E+04 (^{90}Sr, bones)	5,00E-04	0,2 (Gy per year, (*))	a)Anomalies in the body structure: 13.4 % of specimens had one ovary, 18.2 % of specimens were without gonads, 18 % of specimens had morphological anomalies : curvature of fins and the tail part, irregular structure of scales (N=358). On artificial incubation of roe 40 % of normal embryos were produced. This value was not considered as low for the given species (Muntian, 1977). B) Morphological abnormalities were observed in 24% of fish examined: sterile were 17%(3+) and up to 25% (4+ and older) specimen (Voronina, Peshkov, Shekhanova, 1977).	REPR	Muntian, 1977; Voronina, Peshkov, Shekhanova, 1977
A17	Fish	*Carassius carassius Goldfish*	Lake (presumably Berdenish), contaminated in 1957 (Kyshtym accident), southern Urals. Field study	Sr-90	1,20E+03	(9.6±0.4) E+04 (^{90}Sr, bones)	5,00E-04	0,2 (Gy per year, (*))	On artificial incubation of roe 51 % of normal embryos were produced. This value was not considered as low for the given species.	NE	Muntian, 1977
A18	Fish	*Esox lucius Pike*	Water reservoir	Sr-90,Cs-	7,4E+03 (^{90}Sr); 93	6.7E+05 (^{90}Sr,	0,002 ((*))	0,7 (Gy per year,	With respect to the condition of roe and the development of embryos, the	NE	Muntian, 1977

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			contaminated from industrial activity of PA Mayak, southern Urals. Field study of 1971-1975	137	(^{137}Cs)	bones); 1.9E+05 (^{137}Cs, muscles)		(*))	reproduction was qualitatively estimated as normal.		
A19	Fish	*Perca fluviatilis Perch*	Water reservoir, contaminated in 1957 (Kyshtym accident), southern Urals. Field studies of 1970s.	Sr-90,Cs-137	7,4E+03 (^{90}Sr); 93 (^{137}Cs)	(1,1-11,5)E+05 (^{90}Sr, bones); (3,2-4,5)E+05 (^{137}Cs, muscles)	0,0026 , ((*))	1 (per year, (*))	With respect to the condition of roe and the development of embryos, the reproduction was qualitatively estimated as normal.	NE	Muntian, 1977
A20	Mollusc	*Mollusc - pond snail*	Experiment in a pond, chronic, duration 4 months	Mixture of fission products, ^{90}Sr dominates	~3,7E+03	about 1E+05 (preliminary estimation)	1E-03 - 1E-02 ((*))		The representatives of benthos (pond-snails and edentates died during the summer season of observations.	MT	Marey, 1976
A21	Shellfish	*Crayfish*	Experiment in a pond, chronic, 4 months	Mixture of fission products, ^{90}Sr dominates	~3,7E+03	about 1E+05 (preliminary estimation)	1E-03 - 1E-02 ((*))		Crayfish died during the summer season, part of the specimens left the experimental pond.	MT	Marey, 1976
A22	Fish	*Hypophthalmichthys molitrix Silver carp*	Cooling Pond of the Chernobyl NPP, contaminated in 1986 .Field	Cs-137	30±14	40000 (muscles)	0,0004 ((*))	4 (1986-1989), (*)	There were 5.7 % of sterile specimens 8.6 % of specimens with the gonad asymmetry. According to the data of cytological analysis, 25 % of males had anomalies of sexual cells. In the control population less than 0.25 % of	REPR	Belova et.al, 1993; Kryshev et al., 1996 (doses); Kryshev, 1998 (doses)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			study of 1989						specimens were sterile.		
A23	Fish	*Hypophthalmichthys molitrix Silver carp*	Cooling Pond of the Chernobyl NPP, contaminated in 1986. Field study of 1990	Cs-137	14±6	40000 (muscles)	0,0004, (*)	4,3 (1986-1990), (*)	There were 12.5 % of sterile specimens and 16.7 % of specimens with the gonad asymmetry. According to the data of cytological analysis, 47.1 % of fish had anomalies of sexual cells.	REPR	Belova et.al, 1993; Kryshev et al., 1996 (doses); Kryshev, 1998 (doses)
A24	Fish	*Hypophthalmichthys molitrix. Silver carp*	Cooling Pond of the Chernobyl NPP, contaminated in 1986. Field study in 1991	Cs-137 (also other radionuclides)	11	40000 (muscles)	0,0004 , (*)	4,5 (1986-1991), (*)	There were 23.1 % of specimens with the gonad asymmetry. No sterile specimens were detected. According to the data of cytological analysis, 68.8 % of fish had anomalies of sexual cells.	REPR	Belova et.al, 1993; Kryshev et al., 1996 (doses); Kryshev, 1998 (doses)
A25	Fish	*Hypophthalmichthys molitrix. Silver carp*	Cooling Pond of the Chernobyl NPP, contaminated in 1986. Field study in 1992	Cs-137	8		0,0004 , (*)	4,6 (1986-1992), (*)	The data of investigation of fish from fishing cribs: 42.9 % of males had a deformed shape of gonads. According to the data of cytological analysis, 100 % of males and 33.3 % of females had anomalies of sexual cells.	REPR	Belova et.al, 1993; Kryshev et al., 1996 (doses); Kryshev, 1998 (doses)
A26	Fish	*Hypophthalmichthys molitrix. Silver carp*	Cooling Pond of the Chernobyl NPP, contaminated in 1986. Field study in 1992	Cs-137	8		0,0004 , (*)	4,6 (1986-1992), (*)	The data of investigation of freely-living fish from the cooling pond of the Chernobyl NPP: 15.4 % of males were partially sterile, and 9.1 % of females had the gonad asymmetry. According to the data of cytological analysis, 89.5 % of fish had anomalies of sexual cells.	REPR	Belova et.al, 1993; Kryshev et al., 1996 (doses); Kryshev, 1998 (doses)
A27	Fish	*Hypophthalmichthys molitrix. Silver carp*	Cooling Pond of the Chernobyl NPP, accidental contamination	Cs-137	8	7500-9000 (muscles)	(4-5)E-04	0,18 (per year in 1989-1992)	The offspring from the first generation of silver carps that survived the Chernobyl accident , the year of birth 1989, were grown in fishing-cribs in the cooling pond of the Chernobyl NPP. In 1992, 28.7 % of fish had	REPR	Makeeva et al.,1994

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in 1986. Field study,1989-1992						anomalies, including 2.8 % sterile bisexual specimens, 11.1 % with anomalies of the gonad shape, 8.3 % with anomalies of the body shape, 3.7 % with anomalies of the swimming bladder, and 2.8 % with the other anomalies.		
A28	Fish	*Hypophthalmichthys molitrix. Silver carp*	Cooling Pond of the Chernobyl NPP, contaminated in 1986. Field study, 1990-1992	Cs-137		7500-9000 (muscles)	(4-5)E-04	0,18 (per year in 1989-1992)	The offspring from the first generation of silver carps that survived the Chernobyl accident , the year of birth 1990, were grown in fishing-cribs in the cooling pond of the Chernobyl NPP. In 1992, 12.1% of fish had anomalies, including 3.2 % with anomalies of the gonad shape and 8.9 % with anomalies of the body shape. No sterile specimens were observed in this generation. According to the data of cytological analysis, all specimens had anomalies in sexual cells, and the number of anomalous sexual cells ranged from1 % to 20 %.	REPR	Makeeva et al.,1994
A30	Zooplankton	*Daphnia*	Experiment	Sr-90	(3.7-37)E+05	(3.7-37)E+7, (*)	0,57-5,7, (*)		Lifetime of Daphnia organisms decreased by 10-15 days as compared to the control.	MT	Lebedeva,1957
A31	Zooplankton	*Daphnia*	Experiment	Sr-90	(3.7-370)E+03	(3.7-370)E+5, preliminary estimation	0,0057-0,57, (*)		The number of young Daphnia increased in the first two days; then suppression manifested itself, and the number of molts and young crustaceans decreased.	MT	Lebedeva,1957
A32	Zooplankton	*Daphnia*	Experiment	Sr-90	3,70	370, (*)	0,0000057, (*)		A weak stimulating effect was observed in Daphnia organisms.	STIM	Lebedeva,1957
A33	Fish	*Esox lucius*	Water	Sr-		7,8E+04	(6,5 ±	2,7 (per	On artificial incubation of roe the	REPR	Smagin,1996

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
		Pike	body,contaminated from industrial activity of PA "Mayak", Southern Urals, Russia, water reservoir N.10.Field studies of 1983-1986	90,Cs-137	14,8E+03 Bq/L of 90Sr and 300 Bq/L of 137Cs.	Bq/kg (Sr-90); 1,3E+05 Bq/kg (Cs-137) in adult pike	2)E-03 Gy/day from b-radiation (1 ± 0.3)E-03 Gy/day from g-radiation (gonads of adult pikes)	year, internal), (*)	percentage of embryoss with abnormalities was 10 times higher (13%) than in the control (1%).Nine types of various deformities occurred in the contaminated water body and one-two types in the control. Forelarvae with anomalies of development died in the first month of life, i.e. were cut off by natural selection		
A34	Fish eggs	*Esox lucius Pike*	Experiment, artificial incubation of roe, 8 days	Sr-90 + Cs-137	<3,7E+05 (Sr-90)+ 3,7E+04 (Cs-137)		5E-03 ((*))	4E-02 ((*))	Stimulation of embryonic development of irradiated fish eggs and earlier hatching of fore-larvae: on the 8th day hatching in the control was 18,8%; in experimental series 70-83.5%. Number of anomalous or dead eggs did not differ from control.	STIM	Pitkyanen,1971
A35-1	Fish eggs	*Esox lucius Pike*	Experiment, artificial incubation of roe, 8 days	Sr-90	<1,85E+07		<0,24 (*)	<3,36 (external, reconstruction)	On artificial incubation of roe the percentage of embryos with abnormalities didn't differ statistically from that in the control (3.8-4.6%).	NE	Pitkyanen,1971
A35-2	Fish eggs	*Esox lucius Pike*	Experiment, artificial incubation of roe, 8 days	Sr-90	3,70E+07		0,47 (*)	6,58 (external, reconstruction)	On artificial incubation of roe the percentage of embryos with abnormalities was 33.3% that is 7-8 times higher than in the control (3.8-4.6%).	REPR	Pitkyanen,1971
A35-3	Fish eggs	*Esox lucius Pike*	Experiment, artificial incubation of roe, 8 days	Sr-90	>=7,4E+07		0,94(*)	7,5(*)	On artificial incubation of roe all embryos had abnormalities and fore-larvae died within 5 days after hatching.	MT	Pitkyanen,1971
A36	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe, up to 128	Sr-90-Y-90	3,7		4,7E-08 (external,	6,0E-06 (external, reconstruction)	On artificial incubation of roe a stimulation of red blood development in embryos was observed. Primary mature erithrocytes were found in	STIM	Neustroev (1966)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			days; T=1-2 C				reconstruction)		large amounts on 109-th day in blood of experimental embryos (80% of red blood elements); in the control mature erithrocytes appeared on 128-th day (20% of red blood elements). The development of experimental embryos proceeded more rapidly, and hatching began earlier than in the control.		
A37-1	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 52 days; T=7-9 C. N=200. Test:death of fish eggs	Co-60	9,25E+06		0,33 (*, external)	17,2	Most part (80%) of eggs died before hatching (control: 16.5%; 0.75<P<0.85)	MT	Lyapin,Podgursky, Knyazeva (1971)
A37-2	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 52 days; T=7-9 C. N=200	Co-60	9,25E+05		0,032 (*, external)	1,72	Up to 54% of eggs died before hatching (control: 16.5%; 0.47<P<0.61)	MT	Lyapin,Podgursky, Knyazeva (1971)
A37-3	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 52 days; T=7-9 C. N=200. Test:death of fish eggs	Co-60	3,70E+03		1,3E-04 (*, external)	6,70E-03	No statistical difference with the control in the number of fish eggs died before hatching	NE	Lyapin,Podgursky, Knyazeva (1971)
A37-4	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 52 days; T=7-9 C. N=100. Test:	Co-60	3,70E+06		0,13(*, external)	6,9	Practically all (98%) of fore-larvae died within few days after hatching.	MT	Lyapin,Podgursky, Knyazeva (1971)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			survival of fore-larvae								
A37-5	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 52 days; T=7-9 C. N=100. Test: survival of fore-larvae	Co-60	3,70E+06		0,13(*, external)	6,9	Practically all (98%) of fore-larvae died within few days after hatching.	MT	Lyapin,Podgursky, Knyazeva (1971)
A38-1	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 52 days; T=7-9 C. N=100. Test: survival of fore-larvae	Mn-54	3,70E+05		4,3*10(-3) (external), (*)	0,55 (external), (*)	Increased percentage of fish eggs died during the artificial incubation of roe: 52% in the experiment and 16.5% in the control. From survived eggs up to 14.5% of larvae had abnormalities (control 3.8%)	MT	Lyapin,Podgursky, Knyazeva (1971)
A38-2	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 128 days; T=7-9 C	Mn-54	1,48E+04		1,7*10(-4) (external), (*)	0,022 (external), (*)	Increased percentage of fish eggs died during the artificial incubation of roe: 26% in the experiment and 16.5% in the control.From survived eggs the increased % of abnormalities in larvae was observed - 9.4% (control 3.8%).	MT	Lyapin,Podgursky, Knyazeva (1971)
A38-3	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 128 days; T=7-9 C. Test:death of fish eggs	Mn-54	3,70E+01		0,0000004(external), (*)		No statistical difference with the control in the number of fish eggs died before hatching	NE	Lyapin,Podgursky, Knyazeva (1971)
A38-4	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 52 days; T=7-9 C.	Mn-54	3,70E+05		0,0043(external), (*)	0,55 (exposure of eggs, reconstruction)	Number of died forelarvae was somewhat higher (31-36%) than that in the control (21%).Difference was statisticaly reliable.	MT	Lyapin,Podgursky, Knyazeva (1971)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			N=100. Test: survival of fore-larvae								
A38-5	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 52 days; T=7-9 C. N=100. Test: survival of fore-larvae	Mn-54	1,48E+04		1,7E-04(external), (*)	0,022 (exposure of eggs, reconstruction)	No statistical difference with the control in the early death of forelarvae	NE	Lyapin,Podgursky, Knyazeva (1971)
A38-6	Fish eggs	*Salmo irideus Gibbans. Rainbow trout*	Experiment, artificial incubation of roe, up to 52 days; T=7-9 C. N=100. Test: survival of fore-larvae	Mn-54	3,70E+01		0,0000004(external), (*)		No difference with the control in the early death of forelarvae	NE	Lyapin,Podgursky, Knyazeva (1971)
A39-1	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe, up to 66 days	Sr-90	185		2,35E-06 (external, reconstruction)	1,55E-04 (external, reconstruction)	Mortality of salmon eggs and larvae was 1.5 times higher than in the control.	MT	Fedorov et.al. (1962).
A39-2	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe, up to 66 days	Cs-137	93		8,3E-07 (external, reconstruction)	5,5E-05 (external, reconstruction)	Mortality of salmon eggs and larvae was 2.4 times higher than in the control	MT	Fedorov et.al. (1962).
A40-1	Fish eggs	*Coregonus peled. Peled*	Several experiments carried out in 4 years, artificial	Mixtures of fission product	1,11E+02 - 1,11E+08			>5	The mortality of fish eggs increased with absorbed dose beginning from the dose 5 Gy. At doses higher than 300 Gy complete death of roe was	MT	Mashneva & Sukalskaya (1973)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			incubation of roe. T=2-4 C. Eggs were incubated from stage "late gastrula"	s (Y-131, Ba-140+La-140, Ru-106)					observed		
A40-2	Fish eggs	*Coregonus peled. Peled*	Several experiments carried out in 4 years, artificial incubation of roe. T=2-4 C. Eggs were incubated from stage "late gastrula"	Mixtures of fission products (Y-131, Ba-140+La-140, Ru-106)	>1,11E+08			>300	At doses higher than 300 Gy complete death of roe was observed	MT	Mashneva & Sukalskaya (1973)
A41-1	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe. 234 days	Ce-144	5,90E+04		0,001 (*)	0,234 (*)	Hatching started about 3-4 days earlier than that in the control and was more prolonged in time.Number of eggs died before hutching were somewhat higher than control value.	MT	Kasatkina et.al. (1973)
A41-2	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe. 234 days	Ce-144	5,18E+03		0,000086 (*)	0,02 (*)	Hatching started about 3-4 days earlier than that in the control and was more prolonged in time.Number of eggs died before hutching were somewhat higher than control value.	MT	Kasatkina et.al. (1973)
A41-3	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Ce-144	5,90E+04		0,001 (*)	0,234 (*)	Negative changes in the red blood of forelarvae (1-7 days old). Concentrations of erythrocytes were 2-2,5 times lower than that in the control.	MB	Kasatkina et.al. (1973)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A41-4	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Ce-144	5,18E+03		0,000086 (*)	0,02 (*)	Negative changes in the red blood of forelarvae (1-7 days old). Concentrations of erythrocytes were 2-2,5 times lower than that in the control.	MB	Kasatkina et.al. (1973)
A41-5	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Ce-144	5,90E+04		0,001 (*)	0,234 (*)	Negative cytogenetic changes in the red blood of forelarvae (1-7 days old). Large number of aberrant mitoses was found. Also picnosis, lisis, vacuolisation of nuclea and cytoplasm were detected in red blood cells.	CG	Kasatkina et.al. (1973)
A41-6	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe. Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Ce-144	5,18E+03		0,000086 (*)	0,02 (*)	Negative cytogenetic changes in the red blood of forelarvae (1-7 days old). Large number of aberrant mitoses was found. Also picnosis, lisis, vacuolisation of nuclea and cytoplasm were detected in red blood cells.	CG	Kasatkina et.al. (1973)
A41-7	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe up to 234 days.	Ce-144	5,90E+04		0,001 (*)	0,234 (*)	The amount of primary sex cells in embryos (80-231 days of egg development) was 1.5-1.8 times higher than that in the control. There were no abnormal embryos at activity concentrations lower than 10(-6) Ci/L	CG	Kasatkina et.al. (1973)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A41-8	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe up to 234 days.	Ce-144	5,18E+03		0,000086 (*)	0,02 (*)	The amount of primary sex sells in embryos (80-231 days of egg development) was 1.5-1.8 times higher than that in the control. There were no abnormal embryos at activity concentrations lower than 10(-6) Ci/L	CG	Kasatkina et.al. (1973)
A41-9	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Ce-144	5,90E+04		0,001 (*)	0,234 (*)	Negative changes in the thyroid gland and hypophysis of exposed forelarvae, which are typical for radiation reaction: destructive changes in epitelia, picnosis of nuclei, bloking of hormon extraction.	CG	Kasatkina et.al. (1973)
A41-10	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Ce-144	5,18E+03		0,000086 (*)	0,02 (*)	Negative changes in the thyroid gland and hypophysis of exposed forelarvae, which are typical for radiation reaction: destructive changes in epitelia, picnosis of nuclei, bloking of hormon extraction.	CG	Kasatkina et.al. (1973)
A42-1	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Cs-137	2,20E+05		0,002 (*)	0,468 (*)	Negative changes in the red blood of forelarvae (1-7 days old). Concentrations of erythrocytes were 2-2,5 times lower than that in the control.	MB	Kasatkina et.al. (1973)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A42-2	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Cs-137	1,85E+04		1,7E-04 (*)	0,039 (*)	Negative changes in the red blood of forelarvae (1-7 days old). Concentrations of erythrocytes were 2-2,5 times lower than that in the control.	MB	Kasatkina et.al. (1973)
A42-3	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Cs-137	2,20E+05		0,002 (*)	0,468 (*)	Negative cytogenetic changes in the red blood of forelarvae (1-7 days old). Large number of aberrant mitoses was found. Also picnosis, lisis, vacuolisation of nuclea and cytoplasm were detected in red blood cells.	CG	Kasatkina et.al. (1973)
A42-4	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Cs-137	1,85E+04		1,7E-04 (*)	0,039 (*)	Negative cytogenetic changes in the red blood of forelarvae (1-7 days old). Large number of aberrant mitoses was found. Also picnosis, lisis, vacuolisation of nuclea and cytoplasm were detected in red blood cells.	CG	Kasatkina et.al. (1973)
A42-5	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe up to 234 days.	Cs-137	2,20E+05		0,002 (*)	0,468 (*)	The amount of primary sex sells in embryos (80-231 days of egg development) was 1.5-1.8 times higher than that in the control.	CG	Kasatkina et.al. (1973)
A42-	Fish	*Salmo salar.*	Experiment,	Cs-137	1,85E+04		1,7E-04	0,039 (*)	The amount of primary sex sells in	CG	Kasatkina et.al.

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
6	eggs	*Salmon*	artificial incubation of roe up to 234 days.				(*)		embryos (80-231 days of egg development) was 1.5-1.8 times higher than that in the control.		(1973)
A42-7	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Cs-137	2,20E+05		0,002 (*)	0,468 (*)	Negative changes in the thyroid gland and hypophysis of exposed forelarvae, which are typical for radiation reaction: destructive changes in epitelia, picnosis of nuclei, bloking of hormon extraction.	CG	Kasatkina et.al. (1973)
A42-8	Fish eggs	*Salmo salar. Salmon*	Experiment, artificial incubation of roe.Exposure of eggs 234 days, forelarvae was kept in contaminated water.	Cs-137	1,85E+04		1,7E-04 ((*))	0,039 (*)	Negative changes in the thyroid gland and hypophysis of exposed forelarvae, which are typical for radiation reaction: destructive changes in epitelia, picnosis of nuclei, bloking of hormon extraction.	CG	Kasatkina et.al. (1973)
A43-1	Fish eggs	*Carassius carassius Goldfish.*	Experiment, artificial incubation of roe in radionuclide solution from stage 8-16 blastomers (N=40-50).	C-14	7,4E+05 - 7,3E+06		5,1E-04 - 5,1E-03 (*)		Mortality of the goldfish roe was 2 times higher (18-20%) than in the control (6,6%), p=0.5	MT	Fedorova (1964)
A43-2	Fish eggs	*Carassius carassius Goldfish.*	Experiment, artificial incubation of	C-14	7,40E+04		0,000051 (*)		Mortality of the goldfish roe did not differ from the control	NE	Fedorova (1964)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			roe in radionuclide solution from stage 8-16 blastomers (N=40-50).								
A44	Fish eggs	*Rutilus rutilus Roach.*	Experiment, artificial incubation of roe in radionuclide solution from stage 8-16 blastomers (N=40-45).	C-14	7,4E+04 - 7,3E+06		5,1E-05 - 5,1E-03 (*)		Mortality of roach roe was 2-2.8 times higher (33-47%) than in the control (17%)	MT	Fedorova (1964)
A45	Fish eggs	*Alburnus alburnus Bleak.*	Experiment, artificial incubation of roe in radionuclide solution from stage 8-16 blastomers (N=47-57).	C-14	7,4E+04 - 7,3E+06		5,1E-05 - 5,1E-03 (*)		Mortality of bleak roe did not differ from control	NE	Fedorova (1964)
A46	Fish eggs	*Acerina cernua Ruff.*	Experiment, artificial incubation of roe in radionuclide solution from stage 8-16 blastomers (N=65-74).	C-14	7,4E+04 - 7,3E+06		5,1E-05 - 5,1E-03 (*)		Mortality of ruff roe did not differ from control	NE	Fedorova (1964)
A47	Fish eggs	*Tinca tinca Tench*	Experiment, artificial incubation of	Sr-90	37 - 3,7E+06		4,7E-07 - 4,7E-02 (external,		The percentage of the hatched eggs was about the same as in the control.	NE	Timofeeva et.al. (1971)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			roe				*)				
A48	Fish eggs	*Perca fluviatilis Perch*	Experiment, artificial incubation of roe	Sr-90	37 - 3,7E+06		4,7E-07 - 4,7E-02 (*, external)		The percentage of the hatched eggs was about the same as in the control.	NE	Timofeeva et.al. (1971)
A49-1	Fish eggs	*Esox lucius Pike*	Experiment, artificial incubation of roe	Sr-90	37 - 3,7E+06		4,7E-07 - 4,7E-02 (*, external)		The percentage of the hatched eggs was about the same as in the control.	NE	Timofeeva et.al. (1971)
A49-2	Fish eggs	*Esox lucius Pike*	Experiment, artificial incubation of roe	Sr-90	37 - 3,7E+06		4,7E-03 - 4,7E-02 (*, external)		Number of damaged anophases and telophases at the stage of late blastula was statistically higher than that in the control.	CG	Timofeeva et.al. (1971)
A50-1	Mollusc	*Limnaea stagnalis mollusk*	Experiment, artificial incubation of roe	Sr-90	1,85E+07		0,24 (external, reconstruction)		Percentage of hatched eggs became considerably lower than in the control	MT	Timofeeva et.al. (1971)
A50-2	Mollusc	*Limnaea stagnalis mollusk*	Experiment, artificial incubation of roe	Sr-90	3,70E+08		4,7 (*, external)		All mollusc's embryos died during 1 day	MT	Timofeeva et.al. (1971)
A51-1	Fish eggs	*Esox lucius Pike.*	Experiment, artificial incubation of roe, 7 days	Sr-90	3,7E+06 - 3E+07		0,047 - 0,37 (*, external)		The percent of died eggs did not differ statistically from control.	NE	Pitkyanen & Shvedov (1971)
A51-2	Fish eggs	*Esox lucius Pike.*	Experiment, artificial incubation of roe, 7 days. Forelarvae was kept in contaminated water.	Sr-90	3,00E+07		0,37 (*, external)		Abnormal larvae comprised 53% of hatched larvae. The abnormalities led to the death of larvae on the 15-22th day after the hatching	MT	Pitkyanen & Shvedov (1971)
A51-3	Fish eggs	*Esox lucius Pike.*	Experiment, artificial incubation of	Sr-90	7,40E+07		0,94 (*, external)		All hatched forelarvae had serious abnormalities	MT	Pitkyanen & Shvedov (1971)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			roe, 7 days. Forelarvae was kept in contaminated water.								
A52	Fish	*Esox lucius(pike)*	Kiev Reservoir of the Dnieper River, field study	Cs-137		200-1600 Bq/kg	(0,7-5,8)E-06 (internal), (*)		3 types of abnormalities of gonads were observed: asymmetry of gonads (34.1%), roe resorption (12.5%), water in gonads (2.5%). Asymmetry of gonads was observed in all pike generations born after the Chernobyl accident.	REPR	Polyakova, 2001
A53	Zooplankton	*Cyclops (Copepoda)*	Experiment, acute exposure	External gamma-exposure				2	Reproduction of exposed cyclops was about 4 times lower than in the control. Lifetime of adult organisms did not changed.	REPR	Onanko, 1973
A54	Zooplankton	*Cladocera (Daphnia longispina, Moina brachiata, Ceriodaphnia affinis, etc. In total, 6 species)*	Experiment, acute exposure	External gamma-exposure				20	Exposed organisms had higher fecundity comparing with the control.	STIM	Onanko, 1973
A55-1	Benthos	*Ostracoda*	Experiment, acute exposure	External gamma-exposure				2,5-10	Exposed organisms had higher fecundity (up to 200%) comparing with the control.	STIM	Dolgushina, Onanko, 1973
A55-2	Benthos	*Ostracoda*	Experiment, acute exposure	External gamma-exposure				20	Exposed organisms had lower fecundity comparing with the control.	REPR	Dolgushina, Onanko, 1973
A56-1	Fish eggs	*Salmo salar. Atlantic salmon.*	Experiment, artificial incubation of	External gamma-exposur				3,14	This dose caused 50% mortality of embryos (LD50) exposed at 1st day of egg's development	MT	Gorodilov, 1971

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			roe, 110 days. Acute exposure at one of development periods.Stage "8-cells" embrio	e							
A56-2	Fish eggs	*Salmo salar. Atlantic salmon.*	Experiment, artificial incubation of roe, 110 days. Acute exposure at 20-24 days of egg's development	External gamma-exposure				8	This dose caused 50% mortality of embryos (LD50) exposed at 20-24 days of egg's development	MT	Gorodilov, 1971
A57-1	Fish eggs	*Coregonus peled. Peled*	Experiment, artificial incubation of roe, 75 days.5 C. Acute exposure at 2-6 days development.	External gamma-exposure				5	This dose caused 100% mortality of embryos (LD) exposed at 2-6 days of egg's development	MT	Gorodilov, 1971
A57-2	Fish eggs	*Coregonus peled. Peled*	Experiment, artificial incubation of roe, 75 days.5 C. Acute exposure at 10-16 days of development.	External gamma-exposure				5	This dose caused 40% mortality of embryos (LD40) exposed at10-16 days of egg's development	MT	Gorodilov, 1971
A58-1	Fish eggs	*Salmo irideus Gairdnerii.*	Experiment, artificial incubation of	External gamma-exposur				5	This dose caused 100% mortality of embryos (LD) exposed at 3rd day of egg's development	MT	Gorodilov, 1971

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
		Rainbow trout	roe. 5 C. Acute exposure at 3rd day of development.	e							
A58-2	Fish eggs	*Salmo irideus Gairdnerii. Rainbow trout*	Experiment, artificial incubation of roe, 75 days.5 C. Acute exposure at 11th day of development.	External gamma-exposure				5	This dose caused 60% mortality of embryos (LD40) exposed at 11th day of egg's development	MT	Gorodilov, 1971
A59-1	Zooplankton	*Cladocera (Daphnia)*	Experiment, single addition of radionuclide in aquatic system	Ru-106	0,0003 Ci/l		0,2 (external, (*))		No effect on mortality of Daphnia	NE	Guskova et al., 1973
A59-2	Zooplankton	*Cladocera (Daphnia)*	Experiment, single addition of radionuclide in aquatic system	Ru-106	5E-03 Ci/l		3,3 (external, (*))		Decrease in survival of Daphnia by 15-20%	MT	Guskova et al., 1973
A60-1	Fish	*Tilapia mossambica (small aquarium fish)*	Aquarium experiment, chronic exposure during the whole lifetime, 550 days	Sr-90	3,7	370 (*)	4,00E-06	8,50E-04	213-th day of experiment - both control and exposed fish were ready for spawning. No effect –exposed fish had normal gonads.	NE	Shekhanova, 1983;
A60-2	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure during the whole lifetime, 550 days	Sr-90	3,70E+02	37000 (*)	4,00E-04	0,1	213-th day of experiment: control fish specimen were ready for spawning. Exposed fish: gonads of males were smaller in mass than in the control, spermatogenesis was somewhat reduced. Females had normal gonads.	REPR	Shekhanova, 1983

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A60-3	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure during the whole lifetime, 550 days	Sr-90	3,70E+04	3700000 (*)	(3-5)E-02	from 8 to 10	213-th day of experiment: control fish was ready for spawning. Exposed fish: 100% of males were sterile (N=120). Gonads were vitreous semitransparent bars or filamentous transparent bars. 30 % of females had underdeveloped ovaries. In total 80 % of females had anomalies of ovaries.	REPR	Shekhanova, 1983
A61-1	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure during the whole lifetime, 550 days	Sr-90	3,7	370(*)	4,00E-06	(3-4)E-03 (reconstruction)	Weak stimulating effect on fertility (tests: % of impregnated roe and the number of normal larvae per one female) Observations were made during the whole reproducting period of fish	REPR	Voronina, 1973,1974; reviewed in Shekhanova,1983
A61-2	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure during the whole lifetime, 550 days	Sr-90	3,70E+02	37000 (*)	4,00E-04	0,2-0,3 (reconstruction)	Production of fish eggs -120% of control. Reduction in the number of normal larvae produced after spawning up to 80 % of the control (calculated per one female). After spawnings females died earlier than in the control. Observations were made during the whole reproducting period of fish	REPR	Voronina, 1973,1974; reviewed in Shekhanova,1983 (p.127); detail description see in Abstract 4_6
A61-3	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure during the whole lifetime, 550 days	Sr-90	3,70E+04	3700000 (*)	(3-5)E-02; 0,1 (gonads)	from 8 to 10	Complete suppression of reproduction. Males were sterile. On impregnation of experimental females by control males the produced larvae died during 160 days.	REPR	Voronina, 1973,1974; reviewed in Shekhanova,1983 (p.127); detail description see in Abstract 4_6
A62-1	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure	Sr-90	1,48E+05		0,05 (eye)	2 (eye)	Pathological deterioration of eyesight. Effect was observed at doses to eyes greater than 2 Gy Edema of crystalline lens and retina of the eye, dystrophic degeneration of the crystalline	MB	Shekhanova,1983, p.131.

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
									substance, disturbance of the structure of photoreceptors.		
A63-1	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure, 800 days	Sr-90	(3,7-7,4)E+02	5,60E+04	4,00E-04	0,4	Lifetime of exposed fish was shorter than in the control. Survived at the end of experiment (800 days) were 54% of exposed fish (control - 71%).	MT	Orlov, 1973, 1974; reviewed in Shekhanova,1983
A63-2	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure, 800 days	Sr-90	(3,7-7,4)E+04	5600000 (*)	3,00E-02	24 (body), 70 (bones), preliminary reconstruction	Lifetime of exposed fish was shorter than in the control. Survived at the end of experiment (800 days) were 33% of exposed fish (control - 71%).	MT	Orlov, 1973, 1974; reviewed in Shekhanova,1983
A64-1	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure, 180 days	Sr-90	5,55E+04	5550000 (*)	(3-5)E-02	(5-9) (reconstruction	Increasing mortality on experimental infection with parasites: 56-60 % of specimens died in the experiment and 13-28 % in the control.	MT	Orlov, 1973, 1974; reviewed in Shekhanova,1983 (p.132);
A64-2	Fish	*Tilapia mossambica*	Aquarium experiment, chronic exposure 180 days	Sr-90	3,70E+02	37000 (*)	4,00E-04	0,1(reconstruction)	The tendency for an increased mortality on experimental infection with parasites. Differences from the control were statistically insignificant.	MT	Orlov, 1973, 1974; reviewed in Shekhanova,1983 (p.132)
A65-1	Fish	*Cyprinus carpio. Carp (1 year old)*	Aquarium experiment, chronic exposure from Sr-90 up to 270 days. Analyses of blood components on 15th, 30th,90th,180t	^{90}Sr	1,85E+03	1,85E+05 (bones, equilibrium) (*)	3,3E-05 (kidney)	less than 0,3-0,4	Concentrations of red blood components did not differ statistically from control.	NE	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			h and 270th days.								
A65-2	Fish	*Cyprinus carpio. Carp (1 year old)*	Aquarium experiment, chronic exposure from Sr-90 up to 270 days. Analyses of blood components on 15th, 30th,90th,180th and 270th days.	^{90}Sr	3,70E+04	3,7E+06 (bones, equilibrium) (*)	2,7E-03 (kidney)	less than 5,3	Concentrations of red blood components did not differ statistically from control.Some abnormalities in erythrocytes were found.	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983
A66-1	Fish	*Cyprinus carpio. Carp (1 year old)*	Aquarium experiment, chronic exposure from Sr-90 up to 270 days. Analyses of blood components on 15th, 30th,90th,180th and 270th days.	^{90}Sr	1,85E+03	1,85E+05 (bones, equilibrium) (*)	3,3E-05 (kidney)	doses higher than 0,04	Concentrations of leucocytes became ststistically lower than in the control. Phase changes in leucocytes concentration with time were detected.	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983
A66-2	Fish	*Cyprinus carpio. Carp (1 year old)*	Aquarium experiment, chronic exposure from Sr-90 up to 270 days. Analyses of blood	^{90}Sr	3,70E+04	3,7E+06 (bones, equilibrium) (*)	2,7E-03 (kidney)	doses higher than 0,7	Concentrations of leucocytes were considerably lower (about 50%) than in the control. Inversion in lymphocyte/granulocute/monocyte proportion	MB	Shleifer & Shekhanova, 1977, 1980; Shekhanova, Orlov, Shleifer (1978); reviewed in Shekhanova,1983

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			components on 15th, 30th,90th,180th and 270th days.								
A67-1	Fish eggs	*Esox lucius Pike*	Water body contaminated with radionuclides, Southern Urals, Russia. Fish eggs were obtained from pike dwelling the contaminated water body. Artificial incubation of roe in a)clean water; b) contaminated water.	Sr-90+Cs-137	Sr-90 (3,7E+03) +Cs-137 (3,7E+02)		0,0033 (bones); 0,0027(gonads) of parent fish	1,2 Gy/year (bones), 1Gy/per year (gonads) exposure of parent fish	The number of abnormal forelarvae from exposed female pikes was considerably higher (30%) than in the control (1%). The same effect was observed in keeping eggs in either clean or or containated water.	REPR	Pitkyanen (1978)
A67-2	Fish eggs	*Esox lucius Pike*	Artificial incubation of roe of pike in water contaminated with Sr-90 and Cs-137.	Sr-90+Cs-137	Sr-90 (3,7E+03) +Cs-137 (3,7E+02)		0,0033 (bones); 0,0027(gonads) of parent fish	1,2 Gy/year (bones), 1Gy/per year (gonads) exposure of parent fish	No difference with the control in amount of death of eggs (14-18%) and abnormalities of forelarvae (1%).	NE	Pitkyanen (1978)
A67-3	Fish	*Esox lucius Pike*	Water body contaminated with radionuclides,	Sr-90+Cs-137	Sr-90 (3,7E+03) +Cs-137 (3,7E+02)		0,0033 (bones); 0,0027(gonads) of	1,2 Gy/year (bones), 1Gy/per	No effect of growth of pike. Growth rate was characterized as good comparing with the control	REPR	Pitkyanen (1978)

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			Southern Urals, Russia. Fish eggs were obtained from pike dwelling the contaminated water body. Artificial incubation of roe in a)clean water; b) contaminated water.				parent fish	year (gonads) exposure of parent fish			
A68-1	Bacteria plankton		Experiment, external gamma exposure, experiment duration - 79 day. Test: the number of bacteia.				1,5 Gy/second	200-40000	The number of bacteria was the minimal in the control (396 thousand of cells per mL) in 4 hours after exposure for every dose.	STIM	Raziulyte,1973
A68-2	Bacteria plankton		Experiment, external gamma exposure, experiment duration - 79 day. Test: the number of bacteia.				1,5 Gy/second	200-40000	Increase of the number of bacteria in comparison with the control for all variants of doses in 1 day after exposure. The number of bacteria was the maximum under the dose in 7500 Gy (1870 thousand of cells per mL).	STIM	Raziulyte,1973
A68-3	Bacteria plankton		Experiment, external gamma exposure,				1,5 Gy/second	200-40000	Increase of the number of bacteria in comparison with the control for the doses 2500 Gy (4259 thousand of cells per mL)and 7500 Gy (2990 thousand	STIM	Raziulyte,1973

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			experiment duration - 79 day. Test: the number of bacteia.						of cells per mL) in 29 days after exposure. No difference in the number of bacteria from control for the rest doses.		
A68-4	Bacteria plankton		Experiment, external gamma exposure, experiment duration - 79 day. Test: the number of bacteia.				1,5 Gy/second	200-40000	The number of bacteria was the minimal in the control in 79 days after exposure for every dose. The number of bacteria was the maximum under the dose in 7500 Gy (1424 thousand of cells per mL).	STIM	Raziulyte,1973
A69	Phyto plankton	*13 species of algae in planktonic biocenosis*	Experiment, external gamma exposure, experiment duration - 79 day. Test: the number of algae.				1,5 Gy/second	200-40000	The number of algae was the minimal in the control in 79 days after exposure. for every dose (except dose 10000 Gy). The number of algae was the maximum under the dose in 2500 Gy (47654 thousand of cells per mL).	STIM	Raziulyte,1973
A70-1	Phyto plankton	*Scenedesmus quadricauda*	Experiment with pure cultures of algae, external gamma exposure, experiment duration - 15 days. Test: the biomass of algae.				1,5 Gy/second	100-400	Derease of the biomass of algae for dose 400 Gy by factor of 2 in comparison with the control.	MT	Raziulyte,1973
A70-2	Phyto plankt	*Pediastrus boryanus*	Experiment with pure				1,5 Gy/secon	100-400	Decrease of the biomass of algae for dose 400 Gy by factor of 6 in	MT	Raziulyte,1973

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	on		cultures of algae, external gamma exposure, experiment duration - 15 days. Test: the biomass of algae.				d		comparison with the control.		
A70-3	Phytoplankton	*Phormidium uncinatum*	Experiment with pure cultures of algae, external gamma exposure, experiment duration - 15 days. Test: the biomass of algae.				1,5 Gy/second	100-400	No discrepancy for the biomass of algae under exposure in comparison with the control. The biomass of algae was 387 mg/l under dose 400 Gy, and 354 mg/l in the control.	NE	Raziulyte,1973
A71-1	Zooplankton	*8 species of animals in planktonic biocenosis*	Experiment, external gamma exposure, experiment duration - 79 day. Test: the number of plankton animals.				1,5 Gy/second	200-40000	Decrease of the number of plankton animals in comparison with the control (2516 1/L) for all variants of doses in 1 day after exposure.	MT	Raziulyte,1973
A71-2	Zooplankton	*8 species of animals in planktonic biocenosis*	Experiment, external gamma exposure, experiment duration - 79				1,5 Gy/second	200-40000	Planktonic animal were observed only for dose 200 Gy and control in 29 and 79 days after exposure. Death of planktonic animals under the doses 500 Gy and higher.	MT	Raziulyte,1973

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			day. Test: the number of plankton animals.								
A71-3	Zooplankton	*8 species of animals in planktonic biocenosis*	Experiment, external gamma exposure, experiment duration - 79 day. Test: the number of plankton animals.				1,5 Gy/second	200	Decrease of the number of species of plankton animals from 8 to 3 in 79 days after exposure.	MT	Raziulyte,1973
A72-1	Mollusc	*Lymnaea stagnalis L. Pond snail*	Experiment, external gamma exposure to embryo of pond snails from Ural lakes. Test: survival of embryos.				0,195 Gy/minute	6	Decrease of the survival of embryos of pond snails after gamma-exposure 6 Gy in comparison with the control. The survival of irradiated embryos was 27,9% (27,7-28,1%) (N=497), and 97,6% (97,3-97,9%) (N=641) in the control (Lake Bol'shoy Tatkul', July).	MT	Famelis,1973
A72-2	Mollusc	*Lymnaea stagnalis L. Pond snail*	Experiment, external gamma exposure to embryo of pond snails from Ural lakes. Test: survival of embryos.				0,195 Gy/minute	6	Decrease of the survival of embryos of pond snails after gamma-exposure 6 Gy in comparison with the control. The survival of irradiated embryos was 72,8% (67-791%) (N=554), and 97,5% (96,9-98,1%) (N=874) in the control (Lake Bol'shoe Miassovo', July).	MT	Famelis,1973
A72-3	Mollusc	*Lymnaea stagnalis L.*	Experiment, external				0,195 Gy/minut	6	Decrease of the survival of embryos of pond snails after gamma-exposure 6	MT	Famelis,1973

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
		Pond snail	gamma exposure to embryo of pond snails from Ural lakes. Test: survival of embryos.				e		Gy in comparison with the control. The survival of irradiated embryos was 31,1% (26-36,2%) (N=984), and 94,5% (91,6-97,4%) (N=828) in the control (Lake Bol'shoy Tatkul', August).		
A72-4	Mollusc	*Lymnaea stagnalis L. Pond snail*	Experiment, external gamma exposure to embryo of pond snails from Ural lakes. Test: survival of embryos.				0,195 Gy/minute	6	Decrease of the survival of embryos of pond snails after gamma-exposure 6 Gy in comparison with the control. The survival of irradiated embryos was 47,8% (42-53,6%) (N=716), and 99,3% (99,1-99,5%) (N=705) in the control (Lake Bol'shoe Miassovo', August).	MT	Famelis,1973
A72-5	Mollusc	*Lymnaea stagnalis L. Pond snail*	Experiment, external gamma exposure to embryo of pond snails from Ural lakes. Test: survival of embryos.				0,195 Gy/minute	6	Decrease of the survival of embryos of pond snails after gamma-exposure 6 Gy in comparison with the control. The survival of irradiated embryos was 49,9% (45-54,8%) (N=1424), and 99,3% (99,1-99,5%) (N=705) in the control (Lake Bol'shoe Miassovo', August).	MT	Famelis,1973
A73-1	Mollusc	*Patinopecten yessoensis Scallop*	Experiment, external gamma exposure to scallops at the age of 1 and 2 years. Test: ability to				0,1 Gy/second	7,5	Destructive changes in gonads of the scallops at the age of 1 and 2 years: coagulation of karyoplasm, extoliation of cytoplasm from external cell membrane, appearance of large vacuoles, and defects of cytoskeleton. These changes were observed in 2-4 days after exposure. The animals were	REPR	Kulepanov,1989

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			reproduction.						sexually mature in 1 year after exposure 7,5 Gy.		
A73-2	Mollusc	*Patinopecten yessoensis Scallop*	Experiment, external gamma exposure to scallops at the age of 1 and 2 years. Test: ability to reproduction.				0,1 Gy/second	15	Destructive changes in gonads of the scallops at the age of 1 and 2 years: coagulation of karyoplasm, extoliation of cytoplasm from external cell membrane, appearance of large vacuoles, and defects of cytoskeleton. These changes were observed in 2-4 days after exposure. The animals were sterile in 1 year after exposure 15 Gy.	REPR	Kulepanov,1989
A74-1	Fish	*Misgurnus fossilis Loach*	Experiment, external gamma exposure to males of loach. Test: development of larva of fish.				0,77 Gy/minute	0,5-10	Increase of dead and abnormal larva with increase of dose to body of fish. Delay of larva emergense was observed on the dose 10 Gy.	REPR	Nechaevskii,1989
A74-2	Fish	*Misgurnus fossilis Loach*	Experiment, external gamma exposure to males of loach. Test: development of larva of fish.				0,77 Gy/minute	2	Decrease of dead and abnormal larva by factor of 2 under the exposure 2 Gy to head of males in comparison of control.	STIM	Nechaevskii,1989
A75-1	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	1 mg/l (12,3 Bq/l)	No data	0,00074 Gy/day (*)	0,022 Gy/month (*)	Decrease of the fertility rate (the number of born animals from 10 females for 30 days) on 21% in comparison with the control.	REPR	Telitchenko,1958; Stroganov,1959
A75-2	Zooplankto	*Daphnia magna*	Experiment, exposure to	U-238	1 mg/l (12,3	No data	0,00074 Gy/day	0,022 Gy/month	Increase of the interval between moultings on 1 day (for last generation	REPR	Telitchenko,1958; Stroganov,1959

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	n	*Straus Daphnia*	Daphnia in 130 days. Test: reproduction		Bq/l)		(*)	(*)	of animals) in comparison with the control. The interval between moultings was 5 days in experiment, and 4 days in the control.		
A75-3	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	1 mg/l (12,3 Bq/l)	No data	0,00074 Gy/day (*)	0,022 Gy/month (*)	Increase of the period of pubescence interval on 5 days (for last generation of animals) in comparison with the control. The period of pubescence was 14 days for irradiated animals, and 9 days in the control.	REPR	Telitchenko,1958; Stroganov,1959
A75-4	zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	1 mg/l (12,3 Bq/l)	No data	0,00074 Gy/day (*)	0,022 Gy/month (*)	Decrease of the litter from 1 female by factor of 3,4 (for last generation of animals) in comparison with the control.	REPR	Telitchenko,1958; Stroganov,1959
A75-5	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	0,5 mg/l (6,15 Bq/l)	No data	0,00037 Gy/day (*)	0,011 Gy/month (*)	Increase of the fertility rate (the number of born animals from 10 femalts for 30 days) on 13% in comparison with the control.	STIM	Telitchenko,1958; Stroganov,1959
A75-6	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	0,5 mg/l (6,15 Bq/l)	No data	0,00037 Gy/day (*)	0,011 Gy/month (*)	Decrease of the interval between moultings on 1 day (for last generation of animals) in comparison with the control. The interval between moultings was 3 days in experiment, and 4 days in the control.	STIM	Telitchenko,1958; Stroganov,1959
A75-7	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	0,5 mg/l (6,15 Bq/l)	No data	0,00037 Gy/day (*)	0,011 Gy/month (*)	Decrease of the period of pubescence interval on 2 days (for last generation of animals) in comparison with the control. The period of pubescence was 7 days for irradiated animals, and 9 days in the control.	STIM	Telitchenko,1958; Stroganov,1959
A75-8	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test:	U-238	0,5 mg/l (6,15 Bq/l)	No data	0,00037 Gy/day (*)	0,011 Gy/month (*)	Decrease of the litter from 1 female by factor of 2,2 (for last generation of animals) in comparison with the control.	REPR	Telitchenko,1958; Stroganov,1959

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			reproduction								
A75-9	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	0,05 mg/l (0,615 Bq/l)	No data	0,000037 Gy/day (*)	0,0011 Gy/month (*)	Increase of the fertility rate (the number of born animals from 10 femalts for 30 days) on 6% in comparison with the control.	STIM	Telitchenko,1958; Stroganov,1959
A75-10	zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	0,05 mg/l (0,615 Bq/l)	No data	0,000037 Gy/day (*)	0,0011 Gy/month (*)	Decrease of the interval between moultings on 1-2 days (for last generation of animals) in comparison with the control. The interval between moultings was 2-3 days in experiment, and 4 days in the control.	STIM	Telitchenko,1958; Stroganov,1959
A75-11	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	0,05 mg/l (0,615 Bq/l)	No data	0,000037 Gy/day (*)	0,0011 Gy/month (*)	Decrease of the period of pubescence interval on 3-5 days (for last generation of animals) in comparison with the control. The period of pubescence was 4-6 days for irradiated animals, and 9 days in the control.	STIM	Telitchenko,1958; Stroganov,1959
A75-12	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	U-238	0,05 mg/l (0,615 Bq/l)	No data	0,000037 Gy/day (*)	0,0011 Gy/month (*)	Decrease of the litter from 1 female by factor of 1,5 (for last generation of animals) in comparison with the control.	REPR	Telitchenko,1958; Stroganov,1959
A75-13	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,5 mg/l (2 Bq/l)	No data	0,00055 Gy/day (*)	0,017 Gy/month (*)	Decrease of the fertility rate (the number of born animals from 10 femalts for 30 days) on 32% in comparison with the control.	REPR	Telitchenko,1958; Stroganov,1959
A75-14	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,5 mg/l (2 Bq/l)	No data	0,00055 Gy/day (*)	0,017 Gy/month (*)	Increase of the interval between moultings on 2 day (for last generation of animals) in comparison with the control. The interval between moultings was 6 days in experiment, and 4 days in the control.	REPR	Telitchenko,1958; Stroganov,1959
A75-15	Zooplankto	*Daphnia magna*	Experiment, exposure to	Th-232	0,5 mg/l (2 Bq/l)	No data	0,00055 Gy/day	0,017 Gy/month	Increase of the period of pubescence interval on 4 days (for last generation	REPR	Telitchenko,1958; Stroganov,1959

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	n	*Straus Daphnia*	Daphnia in 130 days. Test: reproduction				(*)	(*)	of animals) in comparison with the control. The period of pubescence was 13 days for irradiated animals, and 9 days in the control.		
A75-16	zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,5 mg/l (2 Bq/l)	No data	0,00055 Gy/day (*)	0,017 Gy/month (*)	Decrease of the litter from 1 female by factor of 6,3 (for last generation of animals) in comparison with the control.	REPR	Telitchenko,1958; Stroganov,1959
A75-17	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,05 mg/l (2 Bq/l)	No data	0,000055 Gy/day (*)	0,0017 Gy/month (*)	Increase of the fertility rate (the number of born animals from 10 femalts for 30 days) on 20% in comparison with the control.	STIM	Telitchenko,1958; Stroganov,1959
A75-18	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,05 mg/l (2 Bq/l)	No data	0,000055 Gy/day (*)	0,0017 Gy/month (*)	No changes for the interval between moultings (for last generation of animals) in comparison with the control (4 days). The interval between moultings was 6 days in experiment, and 4 days in the control.	NE	Telitchenko,1958; Stroganov,1959
A75-19	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,05 mg/l (2 Bq/l)	No data	0,000055 Gy/day (*)	0,0017 Gy/month (*)	Decrease of the period of pubescence interval on 1 day (for last generation of animals) in comparison with the control. The period of pubescence was 8 days for irradiated animals, and 9 days in the control.	STIM	Telitchenko,1958; Stroganov,1959
A75-20	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,05 mg/l (2 Bq/l)	No data	0,000055 Gy/day (*)	0,0017 Gy/month (*)	Decrease of the litter from 1 female by factor of 2,7 (for last generation of animals) in comparison with the control.	REPR	Telitchenko,1958; Stroganov,1959
A75-21	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,005 mg/l (2 Bq/l)	No data	0,0000055 Gy/day (*)	0,00017 Gy/month (*)	Increase of the fertility rate (the number of born animals from 10 femalts for 30 days) on 17% in comparison with the control.	STIM	Telitchenko,1958; Stroganov,1959

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A75-22	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,005 mg/l (2 Bq/l)	No data	0,0000055 Gy/day (*)	0,00017 Gy/month (*)	No changes for the interval between moultings (for last generation of animals) in comparison with the control (4 days). The interval between moultings was 6 days in experiment, and 4 days in the control.	NE	Telitchenko,1958; Stroganov,1959
A75-23	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,005 mg/l (2 Bq/l)	No data	0,0000055 Gy/day (*)	0,00017 Gy/month (*)	Decrease of the period of pubescence interval on 2 days (for last generation of animals) in comparison with the control. The period of pubescence was 7 days for irradiated animals, and 9 days in the control.	STIM	Telitchenko,1958; Stroganov,1959
A75-24	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 130 days. Test: reproduction	Th-232	0,005 mg/l (2 Bq/l)	No data	0,0000055 Gy/day (*)	0,00017 Gy/month (*)	Decrease of the litter from 1 female by factor of 2,4 (for last generation of animals) in comparison with the control.	REPR	Telitchenko,1958; Stroganov,1959
A76-1	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 300 000 Bq/l Sr-89, 70 000 Bq/l	No data	0,2 Gy/day (*)	6 Gy/month (*)	Decrease of the fertility rate (the number of born animals from 10 femalts for 80 days) on 65% in comparison with the control. The fertility rate was 917 in experiment, and 2661 in the control.	REPR	Telitchenko,1958; Stroganov,1959
A76-2	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 300 000 Bq/l Sr-89, 70 000 Bq/l	No data	0,2 Gy/day (*)	6 Gy/month (*)	Increase of the interval between moultings on 2 days (for last generation of animals) in comparison with the control. The interval between moultings was 6 days in experiment, and 4 days in the control.	REPR	Telitchenko,1958; Stroganov,1959
A76-3	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 300 000 Bq/l Sr-89, 70 000 Bq/l	No data	0,2 Gy/day (*)	6 Gy/month (*)	Increase of the period of pubescence interval on 5 days (for last generation of animals) in comparison with the control. The period of pubescence was 13 days for irradiated animals, and 8 days in the control.	REPR	Telitchenko,1958; Stroganov,1959
A76-4	Zoopl	*Daphnia*	Experiment,	Sr-90,	Sr-90,	No data	0,2	6	Decrease of the litter from 1 female by	REPR	Telitchenko,1958;

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	ankton	*magna Straus Daphnia*	exposure to Daphnia in 80 days. Test: reproduction	Sr-89	300 000 Bq/l Sr-89, 70 000 Bq/l		Gy/day (*)	Gy/month (*)	factor of 3,3 (for last generation of animals) in comparison with the control.		Stroganov,1959
A76-5	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 30 000 Bq/l Sr-89, 7 000 Bq/l	No data	0,02 Gy/day (*)	0,6 Gy/month (*)	Decrease of the fertility rate (the number of born animals from 10 femalts for 80 days) on 26% in comparison with the control. The fertility rate was 1963 in experiment, and 2661 in the control.	REPR	Telitchenko,1958; Stroganov,1959
A76-6	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 30 000 Bq/l Sr-89, 7 000 Bq/l	No data	0,02 Gy/day (*)	0,6 Gy/month (*)	No change for the interval between moultings (for last generation of animals) in comparison with the control (4 days).	NE	Telitchenko,1958; Stroganov,1959
A76-7	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 30 000 Bq/l Sr-89, 7 000 Bq/l	No data	0,02 Gy/day (*)	0,6 Gy/month (*)	Increase of the period of pubescence interval on 1 day (for last generation of animals) in comparison with the control. The period of pubescence was 9 days for irradiated animals, and 8 days in the control.	REPR	Telitchenko,1958; Stroganov,1959
A76-8	zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 30 000 Bq/l Sr-89, 7 000 Bq/l	No data	0,02 Gy/day (*)	0,6 Gy/month (*)	Decrease of the litter from 1 female by factor of 1,6 (for last generation of animals) in comparison with the control.	REPR	Telitchenko,1958; Stroganov,1959
A76-9	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 3 000 Bq/l Sr-89, 700 Bq/l	No data	0,002 Gy/day (*)	0,06 Gy/month (*)	No significant change for the fertility rate (the number of born animals from 10 femalts for 80 days) in comparison with the control. The fertility rate was 2511 in experiment, and 2661 in the control.	NE	Telitchenko,1958; Stroganov,1959
A76-10	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test:	Sr-90, Sr-89	Sr-90, 3 000 Bq/l Sr-89, 700 Bq/l	No data	0,002 Gy/day (*)	0,06 Gy/month (*)	No change for the interval between moultings (for last generation of animals) in comparison with the control (4 days).	NE	Telitchenko,1958; Stroganov,1959

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			reproduction								
A76-11	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 3 000 Bq/l Sr-89, 700 Bq/l	No data	0,002 Gy/day (*)	0,06 Gy/month (*)	No change for period of pubescence interval (for last generation of animals) in comparison with the control. The period of pubescence was 8-9 days for irradiated animals, and 8 days in the control.	NE	Telitchenko,1958; Stroganov,1959
A76-12	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 3 000 Bq/l Sr-89, 700 Bq/l	No data	0,002 Gy/day (*)	0,06 Gy/month (*)	Increase of the litter from 1 female by factor of 1,3 (for last generation of animals) in comparison with the control.	STIM	Telitchenko,1958; Stroganov,1959
A76-13	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 300 Bq/l Sr-89, 70 Bq/l	No data	0,0002 Gy/day (*)	0,006 Gy/month (*)	No significant change for the fertility rate (the number of born animals from 10 femalts for 80 days) in comparison with the control. The fertility rate was 2617 in experiment, and 2661 in the control.	NE	Telitchenko,1958; Stroganov,1959
A76-14	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 300 Bq/l Sr-89, 70 Bq/l	No data	0,0002 Gy/day (*)	0,006 Gy/month (*)	No change for the interval between moultings (for last generation of animals) in comparison with the control (4 days).	NE	Telitchenko,1958; Stroganov,1959
A76-15	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 300 Bq/l Sr-89, 70 Bq/l	No data	0,0002 Gy/day (*)	0,006 Gy/month (*)	Decrease of the period of pubescence interval on 1-2 days (for last generation of animals) in comparison with the control. The period of pubescence was 6-7 days for irradiated animals, and 8 days in the control.	STIM	Telitchenko,1958; Stroganov,1959
A76-16	zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 300 Bq/l Sr-89, 70 Bq/l	No data	0,0002 Gy/day (*)	0,006 Gy/month (*)	No change for the litter from 1 female (for last generation of animals) in comparison with the control.	NE	Telitchenko,1958; Stroganov,1959
A76-17	zooplankto	*Daphnia magna*	Experiment, exposure to	Sr-90, Sr-89	Sr-90, 30 Bq/l	No data	0,00002 Gy/day	0,0006 Gy/month	No significant change for the fertility rate (the number of born animals from	NE	Telitchenko,1958; Stroganov,1959

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	n	*Straus Daphnia*	Daphnia in 80 days. Test: reproduction		Sr-89, 70 Bq/l		(*)	(*)	10 femalts for 80 days) in comparison with the control. The fertility rate was 2711 in experiment, and 2661 in the control.		
A76-18	zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 30 Bq/l Sr-89, 7 Bq/l	No data	0,00002 Gy/day (*)	0,0006 Gy/month (*)	Decrease of the interval between moultings on 1 day (for last generation of animals) in comparison with the control (4 days).	STIM	Telitchenko,1958; Stroganov,1959
A76-19	zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 30 Bq/l Sr-89, 7 Bq/l	No data	0,00002 Gy/day (*)	0,0006 Gy/month (*)	No change for the period of pubescence interval (for last generation of animals) in comparison with the control (8 days).	NE	Telitchenko,1958; Stroganov,1959
A76-20	zooplankton	*Daphnia magna Straus Daphnia*	Experiment, exposure to Daphnia in 80 days. Test: reproduction	Sr-90, Sr-89	Sr-90, 30 Bq/l Sr-89, 7 Bq/l	No data	0,00002 Gy/day (*)	0,0006 Gy/month (*)	No change for the litter from 1 female (for last generation of animals) in comparison with the control.	NE	Telitchenko,1958; Stroganov,1959
A76-21	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, impact of increased concentration of stable isotop of Sr to Daphnia in 80 days. Test: reproduction	Stable Sr	5 mg/l	No data			Decrease of the fertility rate (the number of born animals from 10 femalts for 80 days) on 68% in comparison with the control. The fertility rate was 854 in experiment, and 2661 in the control.	REPR, CHEM	Telitchenko,1958; Stroganov,1959
A76-22	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, impact of increased concentration of stable isotop of Sr to Daphnia in 80 days. Test:	Stable Sr	5 mg/l	No data			Increase of the interval between moultings on 3 days (for last generation of animals) in comparison with the control. The interval between moultings was 7 days in experiment, and 4 days in the control.	REPR, CHEM	Telitchenko,1958; Stroganov,1959

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			reproduction								
A76-23	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, impact of increased concentration of stable isotop of Sr to Daphnia in 80 days. Test: reproduction	Stable Sr	5 mg/l	No data			Increase of the period of pubescence interval on 6-7 days (for last generation of animals) in comparison with the control. The period of pubescence was 14-15 days in experiment, and 8 days in the control.	REPR, CHEM	Telitchenko,1958; Stroganov,1959
A76-24	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, impact of increased concentration of stable isotop of Sr to Daphnia in 80 days. Test: reproduction	Stable Sr	5 mg/l	No data			Decrease of the litter from 1 female by factor of 3 (for last generation of animals) in comparison with the control.	REPR, CHEM	Telitchenko,1958; Stroganov,1959
A76-25	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, impact of increased concentration of stable isotop of Sr to Daphnia in 80 days. Test: reproduction	Stable Sr	1 mg/l	No data			Decrease of the fertility rate (the number of born animals from 10 femalts for 80 days) on 20% in comparison with the control. The fertility rate was 2117 in experiment, and 2661 in the control.	REPR, CHEM	Telitchenko,1958; Stroganov,1959
A76-26	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, impact of increased concentration of stable isotop of Sr to Daphnia in 80 days. Test:	Stable Sr	5 mg/l	No data			Increase of the interval between moultings on 1 day (for last generation of animals) in comparison with the control. The interval between moultings was 5 days in experiment, and 4 days in the control.	REPR, CHEM	Telitchenko,1958; Stroganov,1959

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			reproduction								
A76-27	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, impact of increased concentration of stable isotop of Sr to Daphnia in 80 days. Test: reproduction	Stable Sr	5 mg/l	No data			Increase of the period of pubescence interval on 2 days (for last generation of animals) in comparison with the control. The period of pubescence was 10 days in experiment, and 8 days in the control.	REPR, CHEM	Telitchenko,1958; Stroganov,1959
A76-28	Zooplankton	*Daphnia magna Straus Daphnia*	Experiment, impact of increased concentration of stable isotop of Sr to Daphnia in 80 days. Test: reproduction	Stable Sr	5 mg/l	No data			No significant change for the litter from 1 female (for last generation of animals) in comparison with the control.	NE, CHEM	Telitchenko,1958; Stroganov,1959
A77	Benthos	*Stylaria lacustris Oligochaetae*	Chernobyl contaminated area, 10-km zone, Pripyat' River, 1991	Cs-137, Sr-90 and others	No data	No data	0,043E-03 Gy/day	No data	Increase of the level of chromosomal aberrations for Oligochaetae in highly contaminated area by factor of 2,1 in comparison with not much contaminated area (Strocholesie). In the Pripyat' River the level of chromosomal aberrations was 13,7%(N=637), and in the Strocholesie area (with exposure 0,0024 mGy/day) - 6,4 %(N=887).	CG	Polikarpov,1996; Tsytsugina, 2000,2002
A78-1	Fish	*Alburnus lucidus. Bleak*	Experiment, exposure to fish (at the age of 2 years) in 400 days. Test: reproduction	U-238	1 mg/l (12,3 Bq/l)	No data	0,000074 Gy/day (*)	0,03 (*)	Suppression of the development of ovaries, prepotant development of milts in comparison with the control (N=5).	REPR	Stroganov,1958
A78-2	Fish	*Alburnus*	Experiment,	U-238	5 mg/l	No data	0,00037	0,15 (*)	Degeneration of ovaries in melts,	REPR	Stroganov,1958

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
		lucidus. Bleak	exposure to fish (at the age of 2 years) in 400 days. Test: reproduction		(61,5 Bq/l)		Gy/day (*)		formation of intersexes. 3 males and 2 intersexes were obseved in experiment, and 3 females and 2 males - in the control.		
A78-3	Fish	*Alburnus lucidus. Bleak*	Experiment, exposure to fish (at the age of 2 years) in 400 days. Test: reproduction	U-238	25 mg/l (307,5 Bq/l)	No data	0,00185 Gy/day (*)	0,75 (*)	Degeneration of ovaries in melts, formation of intersexes. 3 males and 2 intersexes were obseved in experiment, and 3 females and 2 males - in the control.	REPR	Stroganov,1958
A79-1	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	7,4	No data	No data	0,00000028	No significant change in the quantity of lost fish eggs (16,2%) in comparison with the control (14,3%) (N=150).	NE	Pechkurenkov, 1978
A79-2	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	740	No data	No data	0,000028	No significant change in the quantity of lost fish eggs (12,8%) in comparison with the control (14,3%) (N=150).	NE	Pechkurenkov, 1978
A79-3	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	74000	No data	No data	0,0028	No significant change in the quantity of lost fish eggs (15,7%) in comparison with the control (14,3%) (N=150).	NE	Pechkurenkov, 1978
A79-4	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	7400000	No data	No data	0,28	No significant change in the quantity of lost fish eggs (17,3%) in comparison with the control (14,3%) (N=150).	NE	Pechkurenkov, 1978
A79-5	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	740000000	No data	No data	28	No significant change in the quantity of lost fish eggs (13,4%) in comparison with the control (14,3%) (N=150).	NE	Pechkurenkov, 1978
A79-6	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	7,4	No data	No data	0,00000028	Increase of the quantity of abnormal larva with defects of axled skeleton (4%) in comparison with the control (2,3%) (N=150).	REPR	Pechkurenkov, 1978
A79-7	Fish	*Misgurnus*	Experiment.	Sr-	740	No data	No data	0,000028	Increase of the quantity of abnormal	REPR	Pechkurenkov,

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*fossilis Loach*		90,Y-90					larva with defects of axled skeleton (6,1%) in comparison with the control (2,3%) (N=150).		1978
A79-8	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	74000	No data	No data	0,0028	No significant change in the quantity of abnormal larva with defects of axled skeleton (2,6%) in comparison with the control (2,3%) (N=150).	NE	Pechkurenkov, 1978
A79-9	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	7400000	No data	No data	0,28	No significant change in the quantity of abnormal larva with defects of axled skeleton (3,1%) in comparison with the control (2,3%) (N=150).	NE	Pechkurenkov, 1978
A79-10	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	740000000	No data	No data	28	Increase of the quantity of abnormal larva with defects of axled skeleton (15,6%) in comparison with the control (2,3%) (N=150).	REPR	Pechkurenkov, 1978
A79-11	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	7,4	No data	No data	0,00000028	No significant change of the quantity of abnormal larva with heavy defects (5,6%) in comparison with the control (4,3%) (N=150).	NE	Pechkurenkov, 1978
A79-12	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	740	No data	No data	0,000028	No significant change of the quantity of abnormal larva with heavy defects (3,2%) in comparison with the control (4,3%) (N=150).	NE	Pechkurenkov, 1978
A79-13	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	74000	No data	No data	0,0028	No significant change of the quantity of abnormal larva with heavy defects (4,0%) in comparison with the control (4,3%) (N=150).	NE	Pechkurenkov, 1978
A79-14	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	7400000	No data	No data	0,28	No significant change of the quantity of abnormal larva with heavy defects (6,2%) in comparison with the control (4,3%) (N=150).	NE	Pechkurenkov, 1978
A79-15	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	740000000	No data	No data	28	No significant change of the quantity of abnormal larva with heavy defects (5,3%) in comparison with the control (4,3%) (N=150).	NE	Pechkurenkov, 1978
A79-16	Fish	*Misgurnus*	Experiment.	Sr-	7,4	No data	No data	0,000000	No significant change of the quantity	NE	Pechkurenkov,

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*fossilis Loach*		90,Y-90				28	of variable anaphases of larva (5,2%) in comparison with the control (4,6%) (N=150).		1978
A79-17	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	740	No data	No data	0,000028	No significant change of the quantity of variable anaphases of larva (6,1%) in comparison with the control (4,6%) (N=150).	NE	Pechkurenkov, 1978
A79-18	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	74000	No data	No data	0,0028	No significant change of the quantity of variable anaphases of larva (3,9%) in comparison with the control (4,6%) (N=150).	NE	Pechkurenkov, 1978
A79-19	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	7400000	No data	No data	0,28	No significant change of the quantity of variable anaphases of larva (4,4%) in comparison with the control (4,6%) (N=150).	NE	Pechkurenkov, 1978
A79-20	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-90,Y-90	740000000	No data	No data	28	Increase of the quantity of variable anaphases of larva (62,0%) in comparison with the control (4,6%) (N=150).	CG	Pechkurenkov, 1978
A79-21	Fish eggs	*Misgurnus fossilis Loach*	Experiment.	Sr-89	740000000	No data	No data	No data	Increase of the quantity of variable anaphases of larva (43,0%) in comparison with the control (4,6%) (N=150).	CG	Pechkurenkov, 1974,1978
A80	Fish eggs	*Esox lucius L. Pike*	Exposure in experimental water body.	Sr-90,Y-90,Cs-137	5920 Bq/l for Sr-90,Y-90; 140 Bq/l for Cs-137	No data	0,0013		Increase of the quantity of variable anaphases of larva (5,4%, N=34) in comparison with the control (2,1%, N=21).	CG	Pechkurenkov, 1978
A81	Fish eggs	*Perca fluviatilis L. Perch*	Exposure in experimental water body.	Sr-90,Y-90,Cs-137	5920 Bq/l for Sr-90,Y-90; 140 Bq/l for Cs-137	No data	0,00097	0,008	No significant change of the quantity of variable anaphases of larva (2,6%, N=58) in comparison with the control (2,0%) (N=50).	NE	Pechkurenkov, 1978
A82	Fish	*Rutilus*	Exposure in	Sr-	5920 Bq/l	No data	0,00087	0,003	No significant change of the quantity	NE	Pechkurenkov,

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*rutilus lacustris Roach*	experimental water body.	90,Y-90,Cs-137	for Sr-90,Y-90; 140 Bq/l for Cs-137				of variable anaphases of larva (6,2%, N=12) in comparison with the control (5,6%) (N=12).		1978
A83-1	Mollusc	*Lymnaea stagnalis L. Pond snail*	Experiments with pond snails from contaminated water body. Probing acute exposure.	Sr-90,Cs-137	4,4E10+05 Bq/l for Sr-90; 7,0E+04 Bq/l for Cs-137 in water; 5,4E+05 Bq/kg (bottom) for Sr-90; 1,3E+06 Bq/kg (bottom) for Cs-137	2,2E+07 Bq/kg (shell), 6,4E+05 Bq/kg (muscle)for Sr-90; 2,7E+04 Bq/kg (shell), 5,5E+05 Bq/kg (muscle) for Cs-137	1,7E-02 Gy/day of chronic exposure, dose from shell was not considered. (*).		Increase of the survival of pond snails after acute probing gamma-exposure 10 Gy in comparison with the control. The survival of irradiated pond snails was 68% in contaminated water body, and 35% in the control (N=25-30).	AD	Fetisov,1993
A83-2	Mollusc	*Lymnaea stagnalis L. Pond snail*	Experiments with pond snails from contaminated water body. Probing acute exposure.	Sr-90,Cs-137	4,4E10+05 Bq/l for Sr-90; 7,0E+04 Bq/l for Cs-137 in water; 5,4E+05 Bq/kg (bottom) for Sr-90; 1,3E+06 Bq/kg	2,2E+07 Bq/kg (shell), 6,4E+05 Bq/kg (muscle)for Sr-90; 2,7E+04 Bq/kg (shell), 5,5E+05 Bq/kg (muscle) for Cs-	1,7E-02 Gy/day of chronic exposure, dose from shell was not considered. (*).		Increase of the survival of pond snails after gamma-exposure 50 Gy in comparison with the control. The survival of irradiated pond snails was 38% in contaminated water body, and 18% in the control (N=25-30).	AD	Fetisov,1993

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
					(bottom) for Cs-137	137					
A83-3	Mollusc	*Lymnaea stagnalis L. Pond snail*	Experiments with pond snails from contaminated water body. Probing acute exposure.	Sr-90,Cs-137	4,4E10+05 Bq/l for Sr-90; 7,0E+04 Bq/l for Cs-137 in water; 5,4E+05 Bq/kg (bottom) for Sr-90; 1,3E+06 Bq/kg (bottom) for Cs-137	2,2E+07 Bq/kg (shell), 6,4E+05 Bq/kg (muscle)for Sr-90; 2,7E+04 Bq/kg (shell), 5,5E+05 Bq/kg (muscle) for Cs-137	1,7E-02 Gy/day of chronic exposure, dose from shell was not considered. (*).		Increase of the survival of pond snails after gamma-exposure 100 Gy in comparison with the control. The survival of irradiated pond snails was 30% in contaminated water body, and 10% in the control (N=25-30).	AD	Fetisov,1993
A83-4	Mollusc	*Lymnaea stagnalis L. Pond snail*	Experiments with pond snails from contaminated water body. Probing acute exposure.	Sr-90,Cs-137	4,4E10+05 Bq/l for Sr-90; 7,0E+04 Bq/l for Cs-137 in water; 5,4E+05 Bq/kg (bottom) for Sr-90; 1,3E+06 Bq/kg (bottom) for Cs-	2,2E+07 Bq/kg (shell), 6,4E+05 Bq/kg (muscle)for Sr-90; 2,7E+04 Bq/kg (shell), 5,5E+05 Bq/kg (muscle) for Cs-137	1,7E-02 Gy/day of chronic exposure, dose from shell was not considered. (*).		Increase of the survival of pond snails after gamma-exposure 200 Gy in comparison with the control. The survival of irradiated pond snails was 39% in contaminated water body, and 10% in the control (N=25-30).	AD	Fetisov,1993

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
					137						
A84	Mollusc	*Lymnaea stagnalis L. Pond snail*	Field study of pond snails from contaminated water body	Sr-90,Cs-137	4,4E10+05 Bq/l for Sr-90; 7,0E+04 Bq/l for Cs-137 in water; 5,4E+05 Bq/kg (bottom) for Sr-90; 1,3E+06 Bq/kg (bottom) for Cs-137	2,2E+07 Bq/kg (shell), 6,4E+05 Bq/kg (muscle)for Sr-90; 2,7E+04 Bq/kg (shell), 5,5E+05 Bq/kg (muscle) for Cs-137	1,7E-02 Gy/day of chronic exposure, dose from shell was not considered. (*).		Decrease in the size of shell of pond snails in contaminated water body in comparison with the control. The length of shell was 35,39 cm (28,85-41,93 cm) (N=80) in experiment, and 49,02 cm (44,08-53,96 cm) (N=58) in the control.	MB	Fetisov,1993
A85-1	Fish	*Cyprinus carpio L. Carp*	Field studies in the Chernobyl cooling pond, May 1986.	I-131, Zr-95, Ru-103, Ru-106, Ba-140, Ce-141, Ce-144, Cs-134, Cs-137	3000-4000 Bq/l for every radionuclide	No data	0,001	No data	No change for the level of chromosomal aberrations on epithelium of eye cornea (3,1 %) in comparison with the control (3,0%).	NE	Pechkurenkov, 1991
A85-2	Fish	*Cyprinus carpio L. Carp*	Field studies in the Chernobyl cooling pond, September 1986.	Zr-95, Ru-103, Ru-106, Ce-141, Ce-144, Cs-134, Cs-137	2000-3000 Bq/l for every radionuclide	40000-140000 Bq/kg for Cs-137,134	0,001	No data	No change for the level of chromosomal aberrations on epithelium of eye cornea (3,0 %) in comparison with the control (3,0%).	NE	Pechkurenkov, 1991
A86-1	Fish eggs	*Blicca bjoerkna L.*	Field studies in the Chernobyl	Cs-134, Cs-137	170 Bq/l for	No data	0,0003	No data	No change for the level of chromosomal aberrations on fish eggs	NE	Pechkurenkov, 1991

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
		Silver bream	cooling pond, May 1987.		Cs-137,134				(early gastrula) (3,6 %) in comparison with non-contaminated area.		
A86-2	Fish eggs	*Blicca bjoerkna L. Silver bream*	Field studies in the Chernobyl cooling pond, 1990.	Cs-134, Cs-137	3-4 Bq/l for Cs-137,134	No data	0,0003	No data	No change for the level of chromosomal aberrations on fish eggs (neurula) (3,7 %) in comparison with non-contaminated area.	NE	Pechkurenkov, 1991
A86-3	Fish	*Blicca bjoerkna L. Silver bream*	Field studies in the Chernobyl cooling pond, 1987-1988.	Cs-134, Cs-137	3-170 Bq/l for Cs-137,134	No data	0,0003	No data	Statistical discrepancy was observed for 3 morphometric parameters of fish which borned before (N=30) and after (N=38) Chernobyl accident by factors of 2,5-6,35 (significance level, 0,05).	MB	Pechkurenkov, 1991
A87-1	Fish eggs	*Hypophtlmichthys molitrix Valenciennes Silver carp*	Field studies in the Chernobyl cooling pond, 1989.	Cs-134, Cs-137	3-4 Bq/l for Cs-137,134	No data	0,0003	No data	No change for the level of chromosomal aberrations on fish eggs (early gastrula) (5,6 %) in comparison with non-contaminated area.	NE	Pechkurenkov, 1991
A87-2	Fish eggs	*Hypophtlmichthys molitrix Valenciennes Silver carp*	Field studies in the Chernobyl cooling pond, 1989.	Cs-134, Cs-137	3-4 Bq/l for Cs-137,134	No data	0,0003	No data	No change in the level of chromosomal aberrations on fish eggs (late gastrula) (5,4 %) in comparison with non-contaminated area.	NE	Pechkurenkov, 1991
A87-3	Fish	*Hypophtlmichthys molitrix Valenciennes Silver carp*	Field studies in the Chernobyl cooling pond, 1989.	Cs-134, Cs-137	3-4 Bq/l for Cs-137,134	No data	0,0003	No data	No change for the level of chromosomal aberrations on fish larva (4,8 %) in comparison with non-contaminated area.	NE	Pechkurenkov, 1991
A87-4	Fish	*Hypophtlmichthys molitrix Valenciennes Silver carp*	Field studies in the Chernobyl cooling pond, 1990.	Cs-134, Cs-137	3-4 Bq/l for Cs-137,134	No data	0,0003	No data	Increase of the level of chromosomal aberrations for abnormal embryos (6,1 %) in comparison with norm (3,1%).	CG	Pechkurenkov, 1990, 1991
A87-5	Fish	*Hypophtlmichthys molitrix Valenciennes Silver carp*	Field studies in the Chernobyl cooling pond, 1990.	Cs-134, Cs-137	3-4 Bq/l for Cs-137,134	No data	0,0003	No data	Increase of the level of chromosomal aberrations for abnormal larva (12,3 %) in comparison with norm (2,8%).	CG	Pechkurenkov, 1990, 1991

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A87-6	Fish	*Hypophtlmichthys molitrix Valenciennes Silver carp*	Field studies in the Chernobyl cooling pond, 1989-1990.	Cs-134, Cs-137	3-4 Bq/l for Cs-137,134	No data	0,0003	No data	Statistical discrepancy was observed for 8 morphometric parameters of fish which borned before (N=7) and after (N=38) Chernobyl accident by factors of 2,89-9,5 (significance level, 0,05).	MB	Pechkurenkov, 1991
A88	Fish	*Cyprinus carpio L. Carp*	Field studies in the Ural contaminated water body.	Sr-90, Y-90	No data	No data	0,005	No data	No statistical discrepancy for morphometric parameters on 6 generations of carp.	NE	Pechkurenkov, 1991
A89-1	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (25,8 %, N=186) in comparison with the control (83,7%, N=467) by factor of 3,2. Time of external exposure was 20 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-2	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (9,8 %, N=162) in comparison with the control (83,7%, N=467) by factor of 8,5. Time of external exposure was 30 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-3	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (0 %, N=165) in comparison with the control (83,7%, N=467). Time of external exposure was 40 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-4	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (6,6 %, N=136) in comparison with the control (83,7%, N=467) by factor of 12,7. Time of external exposure was 50 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-5	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (44,1%, N=136) in comparison with the control (83,7%,	MT	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			early stages of development in experiment.						N=467) by factor of 1,9. Time of external exposure was 60 minutes after fertilization.		
A89-6	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (65,8 %, N=184) in comparison with the control (83,7%, N=467) by factor of 1,3. Time of external exposure was 70 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-7	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (55,6 %, N=167) in comparison with the control (83,7%, N=467) by factor of 1,5. Time of external exposure was 80 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-8	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (55,9 %, N=143) in comparison with the control (83,7%, N=467) by factor of 1,5. Time of external exposure was 90 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-9	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (36,8 %, N=138) in comparison with the control (83,7%, N=467) by factor of 2,3. Time of external exposure was 100 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-10	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (33,7 %, N=151) in comparison with the control (83,7%, N=467) by factor of 2,5. Time of external exposure was 110 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-11	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (27,5 %, N=156) in comparison with the control (83,7%,	MT	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			early stages of development in experiment.						N=467) by factor of 3,0. Time of external exposure was 120 minutes after fertilization.		
A89-12	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (2,4 %, N=167) in comparison with the control (83,7%, N=467) by factor of 34,9. Time of external exposure was 130 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-13	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (15,4 %, N=162) in comparison with the control (83,7%, N=467) by factor of 5,4. Time of external exposure was 140 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-14	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (74,2 %, N=171) in comparison with the control (83,7%, N=467). Time of external exposure was 150 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-15	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (71,2 %, N=167) in comparison with the control (83,7%, N=467). Time of external exposure was 160 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-16	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (59,8 %, N=147) in comparison with the control (83,7%, N=467) by factor of 1,4. Time of external exposure was 170 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-17	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (56,5 %, N=138) in comparison with the control (83,7%,	MT	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			early stages of development in experiment.						N=467) by factor of 1,5. Time of external exposure was 180 minutes after fertilization.		
A89-18	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (46,0 %, N=139) in comparison with the control (83,7%, N=467) by factor of 1,8. Time of external exposure was 190 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-19	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (13,2 %, N=113) in comparison with the control (83,7%, N=467) by factor of 6,3. Time of external exposure was 200 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A89-20	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the survival of irradiated embryos (2,5 %, N=120) in comparison with the control (83,7%, N=467) by factor of 33,5. Time of external exposure was 210 minutes after fertilization.	MT	Kulikov, 1970a,1970c,1975
A90-1	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (79,1 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0%) by factor of 4,9. Time of external exposure was 20 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-2	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (87,5 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the	REPR	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
									control (16,0 %) by factor of 5,5. Time of external exposure was 30 minutes after fertilization.		
A90-3	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (88,8 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 5,6. Time of external exposure was 50 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-4	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (65,0 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 4,1. Time of external exposure was 60 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-5	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (48,7 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 3,0. Time of external exposure was 70 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-6	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (62,3 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the	REPR	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
									control (16,0 %) by factor of 3,9. Time of external exposure was 80 minutes after fertilization.		
A90-7	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (68,7 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 4,3. Time of external exposure was 90 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-8	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (88,2 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 5,5. Time of external exposure was 100 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-9	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (78,4 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 4,9. Time of external exposure was 110 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-10	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (86,0 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the	REPR	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
									control (16,0 %) by factor of 5,4. Time of external exposure was 120 minutes after fertilization.		
A90-11	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (100,0 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 6,3. Time of external exposure was 130 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-12	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (48,0 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 3,0. Time of external exposure was 140 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-13	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (51,9 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 3,2. Time of external exposure was 150 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-14	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (33,6 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the	REPR	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
									control (16,0 %) by factor of 2,1. Time of external exposure was 160 minutes after fertilization.		
A90-15	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (78,4 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 4,9. Time of external exposure was 170 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-16	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (84,6 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 5,3. Time of external exposure was 180 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-17	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (82,8 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 5,2. Time of external exposure was 190 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A90-18	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (73,3 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the	REPR	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
									control (16,0 %) by factor of 4,6. Time of external exposure was 200 minutes after fertilization.		
A90-19	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Increase of the abnormal irradiated embryos (100,0 %) with different morphological defects (spinal curvature, underdevelopment of caudal fin, defects in structure of heart and blood vessels) in comparison with the control (16,0 %) by factor of 6,3. Time of external exposure was 210 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-1	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (4,1 (3,95-4,25) days) in comparison with the control (5,8 (5,46-6,14) days) on 1,7 days (29 %). Time of external exposure was 20 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-2	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,2 (3,12-3,28) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,6 days (45 %). Time of external exposure was 30 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-3	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (2,91 (2,81-3,01) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,89 days (50 %). Time of external exposure was 50 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-4	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (4,01 (3,77-4,25)	REPR	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			early stages of development in experiment.						days) in comparison with the control (5,8 (5,46-6,14) days) on 1,79 days (31 %). Time of external exposure was 60 minutes after fertilization.		
A91-5	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (4,33 (4,03-4,63) days) in comparison with the control (5,8 (5,46-6,14) days) on 1,47 days (25 %). Time of external exposure was 70 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-6	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	No difference for the average life time period of irradiated embryos before hatch from fish eggs (5,41 (5,21-5,61) days) in comparison with the control (5,8 (5,46-6,14) days). Time of external exposure was 80 minutes after fertilization.	NE	Kulikov, 1970a,1970c,1975
A91-7	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,4 (3,15-3,65) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,4 days (41 %). Time of external exposure was 90 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-8	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,2 (3,0-3,4) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,6 days (45 %). Time of external exposure was 100 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-9	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,72 (3,52-3,92) days) in comparison with the control	REPR	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			development in experiment.						(5,8 (5,46-6,14) days) on 2,08 days (36 %). Time of external exposure was 110 minutes after fertilization.		
A91-10	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,6 (3,46-3,74) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,2 days (38 %). Time of external exposure was 120 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-11	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (2,6 (2,56-2,66) days) in comparison with the control (5,8 (5,46-6,14) days) on 3,2 days (55 %). Time of external exposure was 130 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-12	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,03 (2,93-3,13) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,77 days (48 %). Time of external exposure was 140 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-13	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (4,59 (4,3-4,88) days) in comparison with the control (5,8 (5,46-6,14) days) on 1,21 days (21 %). Time of external exposure was 150 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-14	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,59 (3,29-3,89) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,21 days	REPR	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in experiment.						(38 %). Time of external exposure was 160 minutes after fertilization.		
A91-15	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,39 (3,19-3,59) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,41 days (42 %). Time of external exposure was 170 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-16	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,5 (3,3-3,7) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,3 days (40 %). Time of external exposure was 180 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-17	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	No difference for the average life time period of irradiated embryos before hatch from fish eggs (5,49 (5,29-5,69) days) in comparison with the control (5,8 (5,46-6,14) days). Time of external exposure was 190 minutes after fertilization.	NE	Kulikov, 1970a,1970c,1975
A91-18	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (3,03 (2,93-3,13) days) in comparison with the control (5,8 (5,46-6,14) days) on 2,77 days (48 %). Time of external exposure was 200 minutes after fertilization.	REPR	Kulikov, 1970a,1970c,1975
A91-19	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of fish eggs in early stages of development in experiment.	Co-60			0,26 Gy/minute	2 Gy	Decrease of the average life time period of irradiated embryos before hatch from fish eggs (2,36 (2,26-2,46) days) in comparison with the control (5,8 (5,46-6,14) days) on 3,44 days (59 %). Time of external exposure	REPR	Kulikov, 1970a,1970c,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
									was 210 minutes after fertilization.		
A92-1	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the survival of irradiated embryos (44,8 %, N=491) in comparison with the control (86,5 %, N=1113) by factor of 1,9. Time of external exposure was 15 minutes after fertilization. Stage of development under exposure: before dividing.	MT	Kulikov, 1969,1970b,1975
A92-2	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (80,2 %, N=442) in comparison with the control (86,5 %, N=1113). Time of external exposure was 65 minutes after fertilization. Stage of development under exposure: 2 blastomeres.	NE	Kulikov, 1969,1970b,1975
A92-3	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the survival of irradiated embryos (75,9 %, N=398) in comparison with the control (86,5 %, N=1113) on 10,6 %. Time of external exposure was 80 minutes after fertilization. Stage of development under exposure: 4 blastomeres.	MT	Kulikov, 1969,1970b,1975
A92-4	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (88,1 %, N=578) in comparison with the control (86,5 %, N=1113). Time of external exposure was 95 minutes after fertilization. Stage of development under exposure: 8 blastomeres.	NE	Kulikov, 1969,1970b,1975
A92-5	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (84,9 %, N=680) in comparison with the control (86,5 %, N=1113). Time of external exposure was 125 minutes after fertilization. Stage of development under exposure: 16 blastomeres.	NE	Kulikov, 1969,1970b,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A92-6	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (81,5 %, N=572) in comparison with the control (86,5 %, N=1113). Time of external exposure was 155 minutes after fertilization. Stage of development under exposure: 32 blastomeres.	NE	Kulikov, 1969,1970b,1975
A92-7	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (85,3 %, N=604) in comparison with the control (86,5 %, N=1113). Time of external exposure was 4 h 50 min after fertilization. Stage of development under exposure: middle blastula.	NE	Kulikov, 1969,1970b,1975
A92-8	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (84,7 %, N=708) in comparison with the control (86,5 %, N=1113). Time of external exposure was 9 h 20 min after fertilization. Stage of development under exposure: beginning of gastrula.	NE	Kulikov, 1969,1970b,1975
A92-9	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (85,2 %, N=683) in comparison with the control (86,5 %, N=1113). Time of external exposure was 10 h 50 min after fertilization. Stage of development under exposure: middle gastrula.	NE	Kulikov, 1969,1970b,1975
A92-10	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (85,5 %, N=608) in comparison with the control (86,5 %, N=1113). Time of external exposure was 12 h 20 min after fertilization. Stage of development under exposure: end of gastrula.	NE	Kulikov, 1969,1970b,1975
A92-11	Fish	*Tinca tinca*	Gamma-	Co-60			0,245	2,5 Gy	No significant change for the survival	NE	Kulikov,

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*L. Tench*	exposure of impregnated fish eggs in early stages of development in experiment.				Gy/minute		of irradiated embryos (82,6 %, N=608) in comparison with the control (86,5 %, N=1113). Time of external exposure was 21 h 20 min after fertilization. Stage of development under exposure: beginning of segmentation.		1969,1970b,1975
A92-12	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (86,9 %, N=692) in comparison with the control (86,5 %, N=1113). Time of external exposure was 27 h 40 min after fertilization. Stage of development under exposure: beginning of motion.	NE	Kulikov, 1969,1970b,1975
A92-13	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the survival of irradiated embryos (85,0 %, N=678) in comparison with the control (86,5 %, N=1113). Time of external exposure was 45 h 20 min after fertilization. Stage of development under exposure: beginning of hatching eggs.	NE	Kulikov, 1969,1970b,1975
A93-1	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (100 %) with different morphological defects in comparison with the control (7,7 %) by factor of 13. Time of external exposure was 15 minutes after fertilization. Stage of development under exposure: before cleavage.	REPR	Kulikov, 1969,1970b,1975
A93-2	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (30 %) with different morphological defects in comparison with the control (7,7 %) by factor of 3,9. Time of external exposure was 65 minutes after fertilization. Stage of	REPR	Kulikov, 1969,1970b,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in experiment.						development under exposure: 2 blastomeres.		
A93-3	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (70 %) with different morphological defects in comparison with the control (7,7 %) by factor of 9,1. Time of external exposure was 80 minutes after fertilization. Stage of development under exposure: 4 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A93-4	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (31,4 %) with different morphological defects in comparison with the control (7,7 %) by factor of 4,1. Time of external exposure: 80 minutes after fertilization. Stage of development under exposure: 8 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A93-5	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (45,4 %) with different morphological defects in comparison with the control (7,7 %) by factor of 5,9. Time of external exposure: 125 minutes after fertilization. Stage of development under exposure: 16 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A93-6	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (28,9 %) with different morphological defects in comparison with the control (7,7 %) by factor of 3,8. Time of external exposure: 155 minutes after fertilization. Stage of development at the time of exposure: 32 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A93-7	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of	Co-60			0,245 Gy/minut	2,5 Gy	Increase of the abnormal irradiated embryos (54 %) with different	REPR	Kulikov, 1969,1970b,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			impregnated fish eggs in early stages of development in experiment.				e		morphological defects in comparison with the control (7,7 %) by factor of 7,0. Time of external exposure: 4 h 50 min after fertilization. Stage of development at the time of exposure: middle blastula.		
A93-8	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the abnormal irradiated embryos (10 %) with different morphological defects in comparison with the control (7,7 %). Time of external exposure was 9 h 20 min after fertilization. Stage of development under exposure: beginning of gastrula.	NE	Kulikov, 1969,1970b,1975
A93-9	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (18,6 %) with different morphological defects in comparison with the control (7,7 %) by factor of 2,4. Time of external exposure was 10 h 50 min after fertilization. Stage of development under exposure: middle gastrula.	REPR	Kulikov, 1969,1970b,1975
A93-10	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the abnormal irradiated embryos (10 %) with different morphological defects in comparison with the control (9,6 %). Time of external exposure: 12 h 20 min after fertilization. Stage of development under exposure: end of gastrula.	NE	Kulikov, 1969,1970b,1975
A93-11	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (15,7 %) with different morphological defects in comparison with the control (7,7 %) by factor of 2,0. Time of external exposure: 11 h 20 min after fertilization. Stage of	REPR	Kulikov, 1969,1970b,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in experiment.						development under exposure: beginning of segmentation.		
A93-12	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (22,4 %) with different morphological defects in comparison with the control (7,7 %) by factor of 2,9. Time of external exposure: 27 h 40 min after fertilization. Stage of development under exposure: beginning of motion.	REPR	Kulikov, 1969,1970b,1975
A93-13	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the abnormal irradiated embryos (14,3 %) with different morphological defects in comparison with the control (7,7 %) by factor of 1,9. Time of external exposure: 45 h 20 min after fertilization. Stage of development under exposure: beginning of hatching eggs.	REPR	Kulikov, 1969,1970b,1975
A94-1	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the dead and abnormal irradiated embryos (100 %) with different morphological defects in comparison with the control (20,1 %) by factor of 5. Time of external exposure: 15 minutes after fertilization. Stage of development under exposure: before cleavage.	REPR	Kulikov, 1969,1970b,1975
A94-2	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the dead and abnormal irradiated embryos (44,1 %) with different morphological defects in comparison with the control (20,1 %) by factor of 2,2. Time of external exposure: 65 minutes after fertilization. Stage of development under exposure: 2 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A94-3	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of	Co-60			0,245 Gy/minut	2,5 Gy	Increase of the dead and abnormal irradiated embryos (77,1 %) with	REPR	Kulikov, 1969,1970b,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			impregnated fish eggs in early stages of development in experiment.				e		different morphological defects in comparison with the control (20,1 %) by factor of 3,8. Time of external exposure: 80 minutes after fertilization. Stage of development under exposure: 4 blastomeres.		
A94-4	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the dead and abnormal irradiated embryos (39,6 %) with different morphological defects in comparison with the control (20,1 %) by factor of 2,0. Time of external exposure: 95 minutes after fertilization. Stage of development under exposure: 8 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A94-5	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the dead and abnormal irradiated embryos (53,6 %) with different morphological defects in comparison with the control (20,1 %) by factor of 2,7. Time of external exposure: 125 minutes after fertilization. Stage of development under exposure: 16 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A94-6	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the dead and abnormal irradiated embryos (41,9 %) with different morphological defects in comparison with the control (20,1 %) by factor of 2,1. Time of external exposure: 155 minutes after fertilization. Stage of development under exposure: 32 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A94-7	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the dead and abnormal irradiated embryos (60,7 %) with different morphological defects in comparison with the control (20,1 %) by factor of 3,0. Time of external exposure was 4 h 50 min after	REPR	Kulikov, 1969,1970b,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in experiment.						fertilization. Stage of development under exposure: middle blastula.		
A94-8	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the dead and abnormal irradiated embryos (23,7 %) with different morphological defects in comparison with the control (20,1 %). Time of external exposure was 9 h 20 min after fertilization. Stage of development under exposure: beginning of gastrula.	NE	Kulikov, 1969,1970b,1975
A94-9	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the dead and abnormal irradiated embryos (31,0 %) with different morphological defects in comparison with the control (20,1 %) by factor of 1,5. Time of external exposure was 10 h 50 min after fertilization. Stage of development under exposure: middle gastrula.	REPR	Kulikov, 1969,1970b,1975
A94-10	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the dead and abnormal irradiated embryos (22,8 %) with different morphological defects in comparison with the control (20,1 %). Time of external exposure was 12 h 20 min after fertilization. Stage of development under exposure: end of gastrula.	NE	Kulikov, 1969,1970b,1975
A94-11	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the dead and abnormal irradiated embryos (30,3 %) with different morphological defects in comparison with the control (20,1 %) by factor of 1,5. Time of external exposure was 21 h 20 min after fertilization. Stage of development under exposure: beginning of segmentation.	REPR	Kulikov, 1969,1970b,1975
A94-12	Fish	*Tinca tinca*	Gamma-	Co-60			0,245	2,5 Gy	Increase of the dead and abnormal	REPR	Kulikov,

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*L. Tench*	exposure of impregnated fish eggs in early stages of development in experiment.				Gy/minute		irradiated embryos (31,8 %) with different morphological defects in comparison with the control (20,1 %) by factor of 1,6. Time of external exposure was 27 h 40 min after fertilization. Stage of development under exposure: beginning of motion.		1969,1970b,1975
A94-13	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the dead and abnormal irradiated embryos (27,4 %) with different morphological defects in comparison with the control (20,1 %) by factor of 1,4. Time of external exposure was 45 h 20 min after fertilization. Stage of development under exposure: beginning of hatching eggs.	REPR	Kulikov, 1969,1970b,1975
A95-1	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the average life time of larva hatched from irradiated fish eggs (2,76 (2,54-2,98) days) in comparison with the control (15,32 (15,21-15,43 days) on 12,56 days. Stage of development of fish eggs under exposure : before cleavage (dividing).	REPR	Kulikov, 1969,1970b,1975
A95-2	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the average life time of larva hatched from irradiated fish eggs (10,19 (9,83-10,55) days) in comparison with the control (15,32 (15,21-15,43 days) on 5,13 days. Stage of development of fish eggs under exposure : 2 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A95-3	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the average life time of larva hatched from irradiated fish eggs (8,2 (7,53-8,87) days) in comparison with the control (15,32 (15,21-15,43 days) on 7,12 days. Stage of development of fish eggs under	REPR	Kulikov, 1969,1970b,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in experiment.						exposure : 4 blastomeres.		
A95-4	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the average life time of larva hatched from irradiated fish eggs (11,22 (10,8-11,64) days) in comparison with the control (15,32 (15,21-15,43 days) on 4,1 days. Exposure at the stage of development of fish eggs : 8 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A95-5	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the average life time of larva hatched from irradiated fish eggs (12,23 (11,72-12,74) days) in comparison with the control (15,32 (15,21-15,43 days) on 3,09 days. Stage of development of fish eggs under exposure : 16 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A95-6	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the average life time of larva hatched from irradiated fish eggs (12,16 (11,67-12,65) days) in comparison with the control (15,32 (15,21-15,43 days) on 3,16 days. Stage of development of fish eggs under exposure : 32 blastomeres.	REPR	Kulikov, 1969,1970b,1975
A95-7	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the average life time of larva hatched from irradiated fish eggs (12,07 (11,52-12,62) days) in comparison with the control (15,32 (15,21-15,43 days) on 3,25 days. Stage of development of fish eggs under exposure : middle blastula.	REPR	Kulikov, 1969,1970b,1975
A95-8	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Decrease of the average life time of larva hatched from irradiated fish eggs (14,3 (13,9-14,7) days) in comparison with the control (15,32 (15,21-15,43 days) on 1,02 days. Stage of development of fish eggs under exposure : beginning of gastrula.	REPR	Kulikov, 1969,1970b,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A95-9	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the average life time of larva hatched from irradiated fish eggs (16,94 (16,76-17,12) days) in comparison with the control (15,32 (15,21-15,43 days) on 1,62 days. Stage of development of fish eggs under exposure : middle gastrula.	REPR	Kulikov, 1969,1970b,1975
A95-10	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the average life time of larva hatched from irradiated fish eggs (17,0 (16,79-17,21) days) in comparison with the control (15,32 (15,21-15,43 days) on 1,68 days. Stage of development of fish eggs under exposure : end of gastrula.	REPR	Kulikov, 1969,1970b,1975
A95-11	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the average life time of larva hatched from irradiated fish eggs (15,2 (14,98-15,42) days) in comparison with the control (15,32 (15,21-15,43 days). Stage of development of fish eggs under exposure : beginning of segmentation.	NE	Kulikov, 1969,1970b,1975
A95-12	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the average life time of larva hatched from irradiated fish eggs (14,82 (14,32-15,32) days) in comparison with the control (15,32 (15,21-15,43 days). Stage of development of fish eggs under exposure : beginning of motion.	NE	Kulikov, 1969,1970b,1975
A95-13	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	No significant change for the average life time of larva hatched from irradiated fish eggs (14,95 (14,7-15,2) days) in comparison with the control (15,32 (15,21-15,43 days). Stage of development of fish eggs under exposure : beginning of hatching	NE	Kulikov, 1969,1970b,1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
									eggs.		
A95-14	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60			0,245 Gy/minute	2,5 Gy	Increase of the average life time of larva hatched from irradiated fish eggs (15,97 (15,83-16,11) days) in comparison with the control (15,32 (15,21-15,43 days) on 0,65 day. Stage of development of fish eggs under exposure : immediately after hatching eggs.	REPR	Kulikov, 1969,1970b,1975
A96-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (42 %, N=169) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 26,25. Stage of development of eggs under exposure: before cleavage.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-2	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (18,2 %, N=853) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 11,4. Stage of development of eggs under exposure: 2 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (22,5 %, N=243) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 14,1. Stage of development of eggs under exposure: 2-4 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (42,5 %, N=447) with different morphological defects in	REPR	Kulikov, Famelis, 1970; Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			mollusca eggs in different stages of development in experiment.						comparison with the control (1,6 %, N=1646) by factor of 26,6. Stage of development of eggs under exposure: 4 blastomeres.		
A96-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (47,4 %, N=157) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 29,6. Stage of development of eggs under exposure: 4-8 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-6	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (27,9 %, N=346) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 17,4. Stage of development of eggs under exposure: 8 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-7	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (11,1 %, N=252) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 6,9. Stage of development of eggs under exposure: 32 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-8	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development	Co-60			0,36 Gy/min	3 Gy	No significant change for the abnormal irradiated embryos (1,5 %, N=132) with different morphological defects in comparison with the control (1,6 %, N=1646). Stage of development of eggs under exposure: 64 blastomeres.	NE	Kulikov, Famelis, 1970; Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in experiment.								
A96-9	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (19,3 %, N=592) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 12,1. Stage of development of eggs under exposure: end of cleavage.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-10	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (12,7 %, N=619) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 7,9. Stage of development of eggs under exposure: early gastrula.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-11	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (13,1 %, N=801) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 8,2. Stage of development of eggs under exposure: middle gastrula.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-12	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (13,6 %, N=850) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 8,5. Stage of development of eggs under exposure: late gastrula.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A96-13	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (3,9 %, N=203) with different morphological defects in	REPR	Kulikov, Famelis, 1970; Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			mollusca eggs in different stages of development in experiment.						comparison with the control (1,6 %, N=1646) by factor of 2,1. Stage of development of eggs under exposure: trochophore.		
A96-14	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal irradiated embryos (3,1 %, N=420) with different morphological defects in comparison with the control (1,6 %, N=1646) by factor of 1,9. Stage of development of eggs under exposure: veliger.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (13,6 %, N=169) in comparison with the control (1,4 %, N=1646) by factor of 9,7. Stage of development of eggs under exposure: before cleavage.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-2	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (7,8 %, N=853) in comparison with the control (1,4 %, N=1646) by factor of 5,6. Stage of development of eggs under exposure: 2 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (7,2 %, N=243) in comparison with the control (1,4 %, N=1646) by factor of 5,1. Stage of development of eggs under exposure: 2-4 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in experiment.								
A97-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (9,4 %, N=447) in comparison with the control (1,4 %, N=1646) by factor of 6,7. Stage of development of eggs under exposure: 4 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (13,1 %, N=157) defects in comparison with the control (1,4 %, N=1646) by factor of 9,4. Stage of development of eggs under exposure: 4-8 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-6	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (7,5 %, N=346) in comparison with the control (1,4 %, N=1646) by factor of 5,4. Stage of development of eggs under exposure: 8 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-7	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (3,7 %, N=252) in comparison with the control (1,4 %, N=1646) by factor of 2,6. Stage of development of eggs under exposure: 32 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-8	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (3,1 %, N=132) in comparison with the control (1,4 %,	REPR	Kulikov, Famelis, 1970; Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			mollusca eggs in different stages of development in experiment.						N=1646) by factor of 2,2. Stage of development of eggs under exposure: 64 blastomeres.		
A97-9	Molluscs's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (4,7 %, N=592) in comparison with the control (1,4 %, N=1646) by factor of 3,4. Stage of development of eggs under exposure: end of cleavage.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-10	Molluscs's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (4,6 %, N=619) in comparison with the control (1,4 %, N=1646) by factor of 3,3. Stage of development of eggs under exposure: early gastrula.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-11	Molluscs's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (3,9 %, N=801) in comparison with the control (1,4 %, N=1646) by factor of 2,8. Stage of development of eggs under exposure: middle gastrula.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-12	Molluscs's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (2,4 %, N=850) in comparison with the control (1,4 %, N=1646) by factor of 1,7. Stage of development of eggs under exposure: late gastrula.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in experiment.								
A97-13	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the dead irradiated embryos (4,9 %, N=203) in comparison with the control (1,4 %, N=1646) by factor of 3,5. Stage of development of eggs under exposure: trochophore.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A97-14	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	No significant change for the dead irradiated embryos (1,2 %, N=420) in comparison with the control (1,4 %, N=1646). Stage of development of eggs under exposure: veliger.	NE	Kulikov, Famelis, 1970; Kulikov, 1975
A98-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (55,6 (48,1-63,1) %, N=169) in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 18,5. Stage of development of eggs under exposure: before cleavage.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A98-2	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (26,1 (23,2-29) %, N=853) in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 8,7. Stage of development of eggs under exposure: 2 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A98-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (29,7 (24,2-35,2) %, N=243) in comparison with the	REPR	Kulikov, Famelis, 1970; Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			mollusca eggs in different stages of development in experiment.						control (3,0 (2,2-3,8) %, N=1646) by factor of 9,9. Stage of development of eggs under exposure: 2-4 blastomeres.		
A98-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (51,9 (47,7-56,1) %, N=447) in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 17,3. Stage of development of eggs under exposure: 4 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A98-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (60,5 (52,7-68,3) %, N=157) defects in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 20,2. Stage of development of eggs under exposure: 4-8 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A98-6	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (35,5 (31,3-39,7) %, N=346) in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 11,8. Stage of development of eggs under exposure: 8 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A98-7	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (14,8 (11-18,6) %, N=252) in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 4,9. Stage of development of eggs under exposure: 32 blastomeres.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			in experiment.								
A98-8	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	No significant change for the abnormal and dead irradiated embryos (4,6 (1,7-7,5) %, N=132) in comparison with the control (3,0 (2,2-3,8) %, N=1646). Stage of development of eggs under exposure: 64 blastomeres.	NE	Kulikov, Famelis, 1970; Kulikov, 1975
A98-9	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (24,0 (21,2-26,8) %, N=592) in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 8. Stage of development of eggs under exposure: end of cleavage.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A98-10	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (17,3 (14,4-20,2) %, N=619) in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 5,8. Stage of development of eggs under exposure: early gastrula.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A98-11	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (17,0 (14,1-19,9) %, N=801) in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 5,7. Stage of development of eggs under exposure: middle gastrula.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A98-12	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (16,0 (13,2-18,8) %, N=850) in comparison with the	REPR	Kulikov, Famelis, 1970; Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			mollusca eggs in different stages of development in experiment.						control (3,0 (2,2-3,8) %, N=1646) by factor of 5,3. Stage of development of eggs under exposure: late gastrula.		
A98-13	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	Increase of the abnormal and dead irradiated embryos (8,8 (6,7-10,9) %, N=203) in comparison with the control (3,0 (2,2-3,8) %, N=1646) by factor of 2,9. Stage of development of eggs under exposure: trochophore.	REPR	Kulikov, Famelis, 1970; Kulikov, 1975
A98-14	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in different stages of development in experiment.	Co-60			0,36 Gy/min	3 Gy	No significant change for the abnormal and dead irradiated embryos (4,3 (2,9-5,7) %, N=420) in comparison with the control (3,0 (2,2-3,8) %, N=1646). Stage of development of eggs under exposure: veliger.	NE	Kulikov, Famelis, 1970; Kulikov, 1975
A99-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in early stage of cleavage in experiment.	Co-60				0,15 Gy	No significant change for the survival of irradiated embryos (96,5 %, N=1066) in comparison with the control (95,0 %, N=1352). Stage of development under exposure: 2-4 blastomeres.	NE	Kulikov, 1975
A99-2	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in early stage of cleavage in experiment.	Co-60				1,5 Gy	No significant change for the survival of irradiated embryos (92,4 %, N=687) in comparison with the control (95,0 %, N=1352). Stage of development under exposure: 2-4 blastomeres.	NE	Kulikov, 1975
A99-3	Mollu	*Lymnaea*	Gamma-	Co-60				3,0 Gy	Decrease of the survival of irradiated	MT	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	sc's eggs	*stagnalis L. Pond snail*	exposure of impregnated mollusca eggs in early stage of cleavage in experiment.						embryos (69,9 %, N=299) in comparison with the control (95,0 %, N=1352) on 25,1 %. Stage of development under exposure: 2-4 blastomeres.		
A99-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in early stage of cleavage in experiment.	Co-60				6,0 Gy	Decrease of the survival of irradiated embryos (25,3 %, N=280) in comparison with the control (95,0 %, N=1352) on 69,7 %. Stage of development under exposure: 2-4 blastomeres.	MT	Kulikov, 1975
A99-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in early stage of cleavage in experiment.	Co-60				12,0 Gy	Decrease of the survival of irradiated embryos (12,7 %, N=370) in comparison with the control (95,0 %, N=1352) on 82,3 %. Stage of development under exposure: 2-4 blastomeres.	MT	Kulikov, 1975
A99-6	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in early stage of cleavage in experiment.	Co-60				50,0 Gy	No survival of irradiated embryos (0 %, N=450). Exposure at the stage of development: 2-4 blastomeres.	MT	Kulikov, 1975
A100-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in early stage of cleavage in experiment.	Co-60				0,15 Gy	No significant change for the abnormal irradiated embryos (0,2 %, N=1029) in comparison with the control (0,15 %, N=1305). Stage of development under exposure: 2-4 blastomeres.	NE	Kulikov, 1975
A100-2	Mollusc's	*Lymnaea stagnalis L.*	Gamma-exposure of	Co-60				1,5 Gy	Increase of the abnormal irradiated embryos (1,6 %, N=635) in	REPR	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*Pond snail*	impregnated mollusca eggs in early stage of cleavage in experiment.						comparison with the control (0,15 %, N=1305) by factor of 10,7. Stage of development under exposure: 2-4 blastomeres.		
A100-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in early stage of cleavage in experiment.	Co-60				3,0 Gy	Increase of abnormalities in the irradiated embryos (24,4 %, N=209) in comparison with the control (0,15 %, N=1305) by factor of 163. Exposure at the stage of development: 2-4 blastomeres.	REPR	Kulikov, 1975
A100-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in early stage of cleavage in experiment.	Co-60				6,0 Gy	Increase of abnormalities in the irradiated embryos (36,6 %, N=71) in comparison with the control (0,15 %, N=1305) by factor of 244. Exposure at the stage of development: 2-4 blastomeres.	REPR	Kulikov, 1975
A100-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in early stage of cleavage in experiment.	Co-60				12,0 Gy	Increase of abnormalities in the irradiated embryos (80,9 %, N=47) in comparison with the control (0,15 %, N=1305) by factor of 539. Exposure at the stage of development: 2-4 blastomeres.	REPR	Kulikov, 1975
A101-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic motor system in experiment.	Co-60				0,15 Gy	No significant change for the survival of irradiated embryos (98,6 %, N=498) in comparison with the control (97,2 %, N=466). Stage of development under exposure: embryonic motor system.	NE	Kulikov, 1975
A101-2	Mollusc's	*Lymnaea stagnalis L.*	Gamma-exposure of	Co-60				1,5 Gy	No significant change for the survival of irradiated embryos (97,5	NE	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*Pond snail*	impregnated mollusca eggs in stage of embryonic motor system in experiment.						%, N=458) in comparison with the control (97,2 %, N=466). Exposure at the stage of development: embryonic motor system.		
A101-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic motor system in experiment.	Co-60				3,0 Gy	No significant change for the survival of irradiated embryos (98,0 %, N=471) in comparison with the control (97,2 %, N=466). Exposure at the stage of development: embryonic motor system.	NE	Kulikov, 1975
A101-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic motor system in experiment.	Co-60				6,0 Gy	No significant change for the survival of irradiated embryos (98,5 %, N=494) in comparison with the control (97,2 %, N=466). Exposure at the stage of development: embryonic motor system.	NE	Kulikov, 1975
A101-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic motor system in experiment.	Co-60				12,0 Gy	Decrease of the survival of irradiated embryos (1,5 %, N=580) in comparison with the control (97,2 %, N=466) by factor of 64,8. Exposure at the stage of development: embryonic motor system.	MT	Kulikov, 1975
A101-6	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic	Co-60				15,0 Gy	Decrease of the survival of irradiated embryos (0 %, N=480) in comparison with the control (97,2 %, N=466). Stage of development under exposure: embryonic motor system.	MT	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			motor system in experiment.								
A101-7	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic motor system in experiment.	Co-60				50,0 Gy	Decrease of the survival of irradiated embryos (0 %, N=540) in comparison with the control (97,2 %, N=466). Exposure at the stage of development: embryonic motor system.	MT	Kulikov, 1975
A102-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic motor system in experiment.	Co-60				0,15 Gy	No significant change for the abnormal irradiated embryos (0 %, N=490) in comparison with the control (0 %, N=453). Exposure at the stage of development: embryonic motor system.	NE	Kulikov, 1975
A102-2	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic motor system in experiment.	Co-60				1,5 Gy	No significant change for the abnormal irradiated embryos (0 %, N=446) in comparison with the control (0 %, N=453). Exposure at the stage of development: embryonic motor system.	NE	Kulikov, 1975
A102-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic motor system in experiment.	Co-60				3,0 Gy	No significant change for the abnormal irradiated embryos (0,4 %, N=463) in comparison with the control (0 %, N=453). Stage of development under exposure: embryonic motor system.	NE	Kulikov, 1975
A102-4	Mollusc's	*Lymnaea stagnalis L.*	Gamma-exposure of	Co-60				6,0 Gy	No significant change for the abnormal irradiated embryos (0,4 %,	NE	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*Pond snail*	impregnated mollusca eggs in stage of embryonic motor system in experiment.						N=483) in comparison with the control (0 %, N=453). Stage of development under exposure: embryonic motor system.		
A102-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of embryonic motor system in experiment.	Co-60				12,0 Gy	Increase of the abnormal irradiated embryos (33,3 %, N=9) in comparison with the control (0 %, N=453). Exposure at the stage of development: embryonic motor system.	REPR	Kulikov, 1975
A103-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				0,15 Gy	No significant change for the survival of irradiated embryos (98,0 %, N=488) in comparison with the control (97,7 %, N=707). Stage of development: beginning of shell forming.	NE	Kulikov, 1975
A103-2	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				1,5 Gy	No significant change for the survival of irradiated embryos (96,0 %, N=556) in comparison with the control (97,7 %, N=707). Exposure at the stage of development: beginning of shell forming.	NE	Kulikov, 1975
A103-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of	Co-60				3,0 Gy	No significant change for the survival of irradiated embryos (95,0 %, N=568) in comparison with the control (97,7 %, N=707). Stage of development under exposure: beginning of shell forming.	NE	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			shell forming in experiment.								
A103-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				6,0 Gy	No significant change for the survival of irradiated embryos (97,6 %, N=493) in comparison with the control (97,7 %, N=707). Stage of development under exposure: beginning of shell forming.	NE	Kulikov, 1975
A103-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				12,0 Gy	No significant change for the survival of irradiated embryos (95,5 %, N=581) in comparison with the control (97,7 %, N=707). Stage of development under exposure: beginning of shell forming.	NE	Kulikov, 1975
A103-6	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				15,0 Gy	Decrease of the survival of irradiated embryos (61,2 %, N=430) in comparison with the control (97,7 %, N=707) by factor of 1,6. Stage of development: beginning of shell forming.	MT	Kulikov, 1975
A103-7	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				50,0 Gy	Decrease of the survival of irradiated embryos (7,5 %, N=550) in comparison with the control (97,7 %, N=707) by factor of 13. Stage of development: beginning of shell forming.	MT	Kulikov, 1975
A104-1	Mollusc's	*Lymnaea stagnalis L.*	Gamma-exposure of	Co-60				0,15 Gy	No significant change for the abnormal irradiated embryos (1,0 %,	NE	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*Pond snail*	impregnated mollusca eggs in stage of beginning of shell forming in experiment.						N=477) in comparison with the control (0,3 %, N=692). Stage of development under exposure: beginning of shell forming.		
A104-2	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				1,5 Gy	No significant change for the abnormal irradiated embryos (1,7 %, N=534) in comparison with the control (0,3 %, N=692). Stage of development under exposure: beginning of shell forming.	NE	Kulikov, 1975
A104-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				3,0 Gy	No significant change for the abnormal irradiated embryos (0,4 %, N=538) in comparison with the control (0,3 %, N=692). Exposure at the stage of development: beginning of shell forming.	NE	Kulikov, 1975
A104-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				6,0 Gy	No significant change for the abnormal irradiated embryos (0,8 %, N=480) in comparison with the control (0,3 %, N=692). Stage of development under exposure: beginning of shell forming.	NE	Kulikov, 1975
A104-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of	Co-60				12,0 Gy	No significant change for the abnormal irradiated embryos (1,3 %, N=555) in comparison with the control (0,3 %, N=692). Stage of development under exposure: beginning of shell forming.	NE	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			shell forming in experiment.								
A104-6	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Gamma-exposure of impregnated mollusca eggs in stage of beginning of shell forming in experiment.	Co-60				15,0 Gy	Increase of the abnormal irradiated embryos (4,9 %, N=263) in comparison with the control (0,3 %, N=692) by factor of 16. Stage of development under exposure: beginning of shell forming.	REPR	Kulikov, 1975
A105-1	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,25 Gy	Increase of the survival of irradiated embryos (78,7 (76,8-80,6) %, N=322) in comparison with the control (71 (69-73) %, N=488) on 7,7 %. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	STIM	Alshitz, 1970; Kulikov, 1971, 1975
A105-2	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,50 Gy	Increase of the survival of irradiated embryos (77,0 (74,7-79,3) %, N=452) in comparison with the control (71 (69-73) %, N=488) on 6 %. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	STIM	Alshitz, 1970; Kulikov, 1971, 1975
A105-3	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				1,0 Gy	No significant change for the survival of irradiated embryos (68 (65,2-70,8) %, N=274) in comparison with the control (71 (69-73) %, N=488). Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	NE	Alshitz, 1970; Kulikov, 1971, 1975
A105-4	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in	Co-60				2,0 Gy	Decrease of the survival of irradiated embryos (47,5 (44,7-50,3) %, N=302) in comparison with the control (71 (69-73) %, N=488) on 23,5 %. Stage	MT	Alshitz, 1970; Kulikov, 1971, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			early stages of development in experiment.						of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.		
A105-5	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				4,0 Gy	Decrease of the survival of irradiated embryos (33,6 (30,4-36,8) %, N=218) in comparison with the control (71 (69-73) %, N=488) on 37,4 %. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	MT	Alshitz, 1970; Kulikov, 1971, 1975
A105-6	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				8,0 Gy	Decrease of the survival of irradiated embryos (0 %, N=229) in comparison with the control (71 (69-73) %, N=488). Death of embryos on stage of early gastrula. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	MT	Alshitz, 1970; Kulikov, 1971, 1975
A106-1	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,25 Gy	No significant change for the abnormal irradiated embryos (6,4 (4,9-7,9) %, N=251) in comparison with the control (9,3 (7,7-10,9) %, N=343). Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	NE	Alshitz, 1970; Kulikov, 1971, 1975
A106-2	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,5 Gy	No significant change for the abnormal irradiated embryos (8,3 (6,4-10,2) %, N=347) in comparison with the control (9,3 (7,7-10,9) %, N=343). Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	NE	Alshitz, 1970; Kulikov, 1971, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A106-3	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				1,0 Gy	No significant change for the abnormal irradiated embryos (6,6 (4,8-8,4) %, N=182) in comparison with the control (9,3 (7,7-10,9) %, N=343). Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	NE	Alshitz, 1970; Kulikov, 1971, 1975
A106-4	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				2,0 Gy	No significant change for the abnormal irradiated embryos (11,2 (8,5-14,4) %, N=145) in comparison with the control (9,3 (7,7-10,9) %, N=343). Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	NE	Alshitz, 1970; Kulikov, 1971, 1975
A106-5	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				4,0 Gy	Increase of the abnormal irradiated embryos (41 (35,2-46,8) %, N=73) in comparison with the control (9,3 (7,7-10,9) %, N=343) by factor of 4,4. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 10 degrees centigrade.	REPR	Alshitz, 1970; Kulikov, 1971, 1975
A107-1	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,25 Gy	Increase of the survival of irradiated embryos (83 (80,6-85,4) %, N=394) in comparison with the control (70,7 (67,6-73,8) %, N=207) on 12,3 %. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.	STIM	Alshitz, 1970; Kulikov, 1971, 1975
A107-2	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in	Co-60				0,50 Gy	No significant change for the survival of irradiated embryos (74 (72,6-77,4) %, N=278) in comparison with the control (70,7 (67,6-73,8) %, N=207).	NE	Alshitz, 1970; Kulikov, 1971, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			early stages of development in experiment.						Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.		
A107-3	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				1,0 Gy	No significant change for the survival of irradiated embryos (75 (65,2-70,8) %, N=326) in comparison with the control (70,7 (67,6-73,8) %, N=207). Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.	NE	Alshitz, 1970; Kulikov, 1971, 1975
A107-4	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				2,0 Gy	Decrease of the survival of irradiated embryos (49,5 (46,2-52,8) %, N=246) in comparison with the control (70,7 (67,6-73,8) %, N=207) on 21,2 %. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.	MT	Alshitz, 1970; Kulikov, 1971, 1975
A107-5	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				4,0 Gy	Decrease of the survival of irradiated embryos (0 %, N=305) in comparison with the control (70,7 (67,6-73,8) %, N=207). Death of embryos before hatching eggs. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.	MT	Alshitz, 1970; Kulikov, 1971, 1975
A107-6	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				8,0 Gy	Decrease of the survival of irradiated embryos (0 %, N=290) in comparison with the control (70,7 (67,6-73,8) %, N=207). Death of embryos on stage of late blastula. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.	MT	Alshitz, 1970; Kulikov, 1971, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A108-1	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,25 Gy	No significant change for the abnormal irradiated embryos (12,3 (10,5-14,1) %, N=325) in comparison with the control (10,3 (7,8-12,8) %, N=146). Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.	NE	Alshitz, 1970; Kulikov, 1971, 1975
A108-2	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,5 Gy	Increase of the abnormal irradiated embryos (16,0 (13,3-18,7) %, N=325) in comparison with the control (10,3 (7,8-12,8) %, N=146) on 5,7 %. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.	REPR	Alshitz, 1970; Kulikov, 1971, 1975
A108-3	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				1,0 Gy	Increase of the abnormal irradiated embryos (27,2 (24,4-30) %, N=249) in comparison with the control (10,3 (7,8-12,8) %, N=146) on 16,9 %. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.	REPR	Alshitz, 1970; Kulikov, 1971, 1975
A108-4	Fish eggs	*Esox lucius L. Pike*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				2,0 Gy	Increase of the abnormal irradiated embryos (57,0 (52,4-61,6) %, N=122) in comparison with the control (10,3 (7,8-12,8) %, N=146) on 46,7 %. Stage of development under exposure: before first cleavage of zygote. Temperature of water was 20 degrees centigrade.	REPR	Alshitz, 1970; Kulikov, 1971, 1975
A109-1	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in	Co-60				0,25 Gy	No significant change for the survival of irradiated embryos (84 (79,8-88,2) %, N=3151) in comparison with the control (82,5 (80,2-84,8) %, N=2341).	NE	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			early stages of development in experiment.						Stage of development under exposure: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.		
A109-2	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,5 Gy	No significant change for the survival of irradiated embryos (83 (80,2-85,8) %, N=2234) in comparison with the control (82,5 (80,2-84,8) %, N=2341). Stage of development under exposure: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.	NE	Kulikov, 1975
A109-3	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				1,0 Gy	No significant change for the survival of irradiated embryos (83 (79,9-86,1) %, N=2016) in comparison with the control (82,5 (80,2-84,8) %, N=2341). Stage of development under exposure: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.	NE	Kulikov, 1975
A109-4	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				2,0 Gy	No significant change for the survival of irradiated embryos (80 (76-84) %, N=2544) in comparison with the control (82,5 (80,2-84,8) %, N=2341). Stage of development under exposure: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.	NE	Kulikov, 1975
A109-5	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				4,0 Gy	No survival of irradiated embryos (0 %, N=3010); in the control survived were 82,5 (80,2-84,8) %, N=2341. Death of embryos before hatching eggs. Stage of development under exposure: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.	MT	Kulikov, 1975
A109-6	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of	Co-60				8,0 Gy	No survival of irradiated embryos (0 %, N=2950); in the control survived were 82,5 (80,2-84,8) %, N=2341). Death of embryos on stage of late gastrula. Exposure at the stage of	MT	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			development in experiment.						development: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.		
A109-7	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				12,0 Gy	No survival of irradiated embryos (0 %, N=2116); in the control survived were 82,5 (80,2-84,8) %, N=2341. Death of embryos on the stage: beginning of gastrulation. Exposure at the stage of development: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.	MT	Kulikov, 1975
A110-1	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,25 Gy	No significant change for the abnormal of irradiated embryos (5,4 (3,7-7,1) %, N=2657) in comparison with the control (7,2 (5,1-9,3) %, N=1992). Stage of development under exposure: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.	NE	Kulikov, 1975
A110-2	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				0,5 Gy	No significant change for the abnormal of irradiated embryos (9,2 (7-11,4) %, N=1847) in comparison with the control (7,2 (5,1-9,3) %, N=1992). Stage of development under exposure: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.	NE	Kulikov, 1975
A110-3	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated fish eggs in early stages of development in experiment.	Co-60				1,0 Gy	No significant change in the numbers of abnormalities in irradiated embryos (13,2 (8,8-17,2) %, N=1675) in comparison with the control (7,2 (5,1-9,3) %, N=1992). Exposure at the stage of development: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.	NE	Kulikov, 1975
A110-4	Fish eggs	*Tinca tinca L. Tench*	Gamma-exposure of impregnated	Co-60				2,0 Gy	Increase of the abnormalities in irradiated embryos on 25,5 % (32,7 (29,7-35,7) %, N=2022; control 7,2	REPR	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			fish eggs in early stages of development in experiment.						(5,1-9,3) %, N=1992). Exposure at the stage of development: 2 blastomeres. Temperature of water was 20-23 degrees centigrade.		
A111-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	37 Bq/L		4,30E-06	0,000035 Gy for 8 days	No significant change for the survival of irradiated embryos (98,0 %, N=539) in comparison with the control (98 %, N=553).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A111-2	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	3,7 kBq/L		4,30E-04	0,0035 Gy for 8 days	No significant change for the survival of irradiated embryos (97,2 %, N=497) in comparison with the control (98 %, N=553).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A111-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	37 kBq/L		4,30E-03	0,035 Gy for 8 days	No significant change for the survival of irradiated embryos (98,5 %, N=266) in comparison with the control (98 %, N=553).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A111-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	370 kBq/L		4,30E-02	0,35 Gy for 8 days	No significant change for the survival of irradiated embryos (96 %, N=653) in comparison with the control (98 %, N=553).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A111-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development	Sr-90, Y-90	3700 kBq/L		0,43	3,5 Gy for 8 days	No significant change for the survival of irradiated embryos (97 %, N=602) in comparison with the control (98 %, N=553).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			of mollusca embryos in experiment.								
A111-6	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	18500 kBq/L		2,1	17 Gy for 8 days	Decrease of the survival of irradiated embryos (91,5 %, N=366) in comparison with the control (98 %, N=553) on 6,5 %.	MT	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A111-7	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	37000 kBq/L		4,3	35 Gy for 8 days	Decrease of the survival of irradiated embryos (61,5 %, N=501) in comparison with the control (98 %, N=553) on 36,5 %.	MT	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A111-8	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	370000 kBq/L			350 Gy for 8 days	None of of irradiated embryos survived (0 %, N=550); control (98 %, N=553).	MT	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A112-1	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	37 Bq/L		4,30E-06	0,000035 Gy for 8 days	No significant change for the abnormal irradiated embryos (0 %, N=527) in comparison with the control (0,2 %, N=544).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A112-2	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca	Sr-90, Y-90	3,7 kBq/L		4,30E-04	0,0035 Gy for 8 days	No significant change for the abnormal irradiated embryos (0,4 %, N=481) in comparison with the control (0,2 %, N=544).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			embryos in experiment.								
A112-3	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	37 kBq/L		4,30E-03	0,035 Gy for 8 days	No significant change for the abnormal irradiated embryos (0,4 %, N=262) in comparison with the control (0,2 %, N=544).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A112-4	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	370 kBq/L		4,30E-02	0,35 Gy for 8 days	No significant change for the abnormal irradiated embryos (0,8 %, N=625) in comparison with the control (0,2 %, N=544).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A112-5	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	3700 kBq/L		0,43	3,5 Gy for 8 days	No significant change for the abnormal irradiated embryos (0,5 %, N=584) in comparison with the control (0,2 %, N=544).	NE	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A112-6	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in experiment.	Sr-90, Y-90	18500 kBq/L		2,1	17 Gy for 8 days	Increase of the abnormal irradiated embryos (1,2 %, N=335) in comparison with the control (0,2 %, N=544) by factor of 6.	REPR	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971
A112-7	Mollusc's eggs	*Lymnaea stagnalis L. Pond snail*	Impact of Sr-90 and Y-90 on development of mollusca embryos in	Sr-90, Y-90	37000 kBq/L		4,3	35 Gy for 8 days	Increase of the abnormal irradiated embryos (6,2 %, N=308) in comparison with the control (0,2 %, N=544) by factor of 31.	REPR	Kulikov, 1966, 1967, 1971, 1975; Timofeeva, 1971

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			experiment.								
A113-1	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3,7 Bq/L			1,57E-07 Gy	No significant change for the survival of irradiated embryos (72,3 (67,2-77,4) %, N=2931) in comparison with the control (75 (70,9-79,1) %, N=2810).	NE	Kulikov, 1968, 1975; Timofeeva, 1971
A113-2	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	37 Bq/L			1,57E-06 Gy	No significant change in the survival of irradiated embryos (70,2 (62,1-78,3) %, N=3045) in comparison with the control (75 (70,9-79,1) %, N=2810).	NE	Kulikov, 1968, 1975; Timofeeva, 1971
A113-3	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370 Bq/L			1,57E-05 Gy	No significant change for the survival of irradiated embryos (74 (68,9-79,1) %, N=2772) in comparison with the control (75 (70,9-79,1) %, N=2810).	NE	Kulikov, 1968, 1975; Timofeeva, 1971
A113-4	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3700 Bq/L			1,57E-04 Gy	No significant change for the survival of irradiated embryos (71 (63,8-78,2) %, N=2951) in comparison with the control (75 (70,9-79,1) %, N=2810).	NE	Kulikov, 1968, 1975; Timofeeva, 1971
A113-5	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370000 Bq/L			1,57E-02 Gy	No significant change for the survival of irradiated embryos (77 (74,6-79,4) %, N=1597) in comparison with the control (75 (70,9-79,1) %, N=2810).	NE	Kulikov, 1968, 1975; Timofeeva, 1971

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
A114-1	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3,7 Bq/L			1,57E-07 Gy	No significant change for the abnormal irradiated embryos (7,0 %, N=2118) in comparison with the control (6,8 %, N=2106).	NE	Kulikov, 1968, 1975; Timofeeva, 1971
A114-2	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	37 Bq/L			1,57E-06 Gy	No significant change for the abnormal irradiated embryos (6 %, N=2136) in comparison with the control (6,8 %, N=2106).	NE	Kulikov, 1968, 1975; Timofeeva, 1971
A114-3	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370 Bq/L			1,57E-05 Gy	No significant change for the abnormal irradiated embryos (7,5 %, N=2054) in comparison with the control (6,8 %, N=2106).	NE	Kulikov, 1968, 1975; Timofeeva, 1971
A114-4	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3700 Bq/L			1,57E-04 Gy	No significant change for the abnormal irradiated embryos (6,1 %, N=2092) in comparison with the control (6,8 %, N=2106).	NE	Kulikov, 1968, 1975; Timofeeva, 1971
A114-5	Fish eggs	*Tinca tinca L. Tench*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370000 Bq/L			1,57E-02 Gy	No significant change for the abnormal irradiated embryos (6,9 %, N=1231) in comparison with the control (6,8 %, N=2106).	NE	Kulikov, 1968, 1975; Timofeeva, 1971
A115-1	Fish	*Esox lucius*	Impact of Sr-	Sr-90,	37 Bq/L		3,00E-06	2,59E-05	No significant change in the survival	NE	Kulikov, 1975;

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
	eggs	*L. Pike*	90 and Y-90 on development of fish embryos in experiment.	Y-90				Gy	of irradiated embryos (74 (72-76) %, N=400) in comparison with the control (72 (70-74) %, N=445).		Timofeeva, 1970
A115-2	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370 Bq/L		3,00E-05	2,59E-04 Gy	No significant change for the survival of irradiated embryos (72 (69-75) %, N=316) in comparison with the control (72 (70-74) %, N=445).	NE	Kulikov, 1975; Timofeeva, 1970
A115-3	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3700 Bq/L		3,00E-04	2,59E-03 Gy	No significant change for the survival of irradiated embryos (66 (62-69) %, N=369) in comparison with the control (72 (70-74) %, N=445).	NE	Kulikov, 1975; Timofeeva, 1970
A115-4	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370000 Bq/L		3,00E-02	2,59E-01 Gy	Increase of the survival of irradiated embryos (80 (78-82) %, N=318) in comparison with the control (72 (70-74) %, N=445) on 8 %.	STIM	Kulikov, 1975; Timofeeva, 1970
A115-5	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3700 kBq/L		0,3	2,59 Gy	No significant change for the survival of irradiated embryos (75 (73-77) %, N=378) in comparison with the control (72 (70-74) %, N=445).	NE	Kulikov, 1975; Timofeeva, 1970
A116-1	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90	Sr-90, Y-90	37 Bq/L		3,00E-06	2,59E-05 Gy	No significant change for the abnormal irradiated embryos (13,5	NE	Kulikov, 1975; Timofeeva, 1970

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			on development of fish embryos in experiment.						(11,5-15,5) %, N=296) in comparison with the control (10,2 (8,3-12,1) %, N=322).		
A116-2	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370 Bq/L		3,00E-05	2,59E-04 Gy	No significant change in numbers of the abnormal irradiated embryos (10,5 (8,5-12,5) %, N=228; control 10,2 (8,3-12,1) %, N=322).	NE	Kulikov, 1975; Timofeeva, 1970
A116-3	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3700 Bq/L		3,00E-04	2,59E-03 Gy	No significant change for the abnormal irradiated embryos (15 (12,7-17,3) %, N=245) in comparison with the control (10,2 (8,3-12,1) %, N=322).	NE	Kulikov, 1975; Timofeeva, 1970
A116-4	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370000 Bq/L		3,00E-02	2,59E-01 Gy	No significant change for the abnormal irradiated embryos (12 (10-14) %, N=254) in comparison with the control (10,2 (8,3-12,1) %, N=322).	NE	Kulikov, 1975; Timofeeva, 1970
A116-5	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3700 kBq/L		0,3	2,59 Gy	Increase of the abnormal irradiated embryos (21 (16,9-25,1) %, N=284) in comparison with the control (10,2 (8,3-12,1) %, N=322) by factor of 2,1.	REPR	Kulikov, 1975; Timofeeva, 1970
A117	Fish eggs	*Perca fluviatilis L. Perch*	Impact of Sr-90 and Y-90 on	Sr-90, Y-90	3,7-370000 Bq/L			0,0000029-0,29 Gy	No significant change in numbers of the abnormal irradiated embryos in comparison with the control.	NE	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			development of fish embryos in experiment.								
A118-1	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	37 Bq/L		3,00E-06	2,59E-05 Gy	No significant change in numbers of defective anaphases and telophases in cells of irradiated embryos (8,8 (7,5-10,1) %, N=500) in comparison with the control (11,4 (10,0-12,8) %, N=500). Stage of development of embryos : late blastula.	NE	Kulikov, 1975
A118-2	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370 Bq/L		3,00E-05	2,59E-04 Gy	No significant change in numbers of defective anaphases and telophases in cells of irradiated embryos (11,0 (9,6-12,4) %, N=500) in comparison with the control (11,4 (10,0-12,8) %, N=500). Stage of development of embryos : late blastula.	NE	Kulikov, 1975
A118-3	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3700 Bq/L		3,00E-04	2,59E-03 Gy	Increase of the defective anaphases and telophases in cells of irradiated embryos by factor of 1,4 (15,6 (14-17,2) %, N=500; control 11,4 (10,0-12,8) %, N=500) . Stage of development of embryos : late blastula.	CG	Kulikov, 1975
A118-4	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370000 Bq/L		3,00E-02	2,59E-01 Gy	Increase of the defective anaphases and telophases in cells of irradiated embryos by factor of 1,5: (17,6 (15,9-19,3) %, N=500) in comparison with the control (11,4 (10,0-12,8) %, N=500). Stage of development of embryos : late blastula.	CG	Kulikov, 1975
A118-5	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development	Sr-90, Y-90	3700000 Bq/L		0,3	2,59 Gy	Increase of the defective anaphases and telophases in cells of irradiated embryos (28,4 (26,3-30,5) %, N=500) in comparison with the control (11,4	CG	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			of fish embryos in experiment.						(10,0-12,8) %, N=500) by factor of 2,5. Stage of development of embryos : late blastula.		
A119-1	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	37 Bq/L		3,00E-06	2,59E-05 Gy	No significant change in cells with bridges in irradiated embryos (1,0 (0,6-1,4) %, N=500; in control 1,2 (0,7-1,7) %, N=500). Stage of development of embryos : late blastula.	NE	Kulikov, 1975
A119-2	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370 Bq/L		3,00E-05	2,59E-04 Gy	Increase of the cells with bridges for irradiated embryos (2,8 (2,1-3,5) %, N=500) in comparison with the control (1,2 (0,7-1,7) %, N=500) by factor of 2,3. Stage of development of embryos : late blastula.	CG	Kulikov, 1975
A119-3	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3700 Bq/L		3,00E-04	2,59E-03 Gy	No significant change in cells with bridges in irradiated embryos (1,4 (0,9-1,9) %, N=500) in comparison with the control (1,2 (0,7-1,7) %, N=500). Stage of development of embryos : late blastula.	NE	Kulikov, 1975
A119-4	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370000 Bq/L		3,00E-02	2,59E-01 Gy	Increase of the cells with bridges in irradiated embryos by factor of 2,5 (3,0 (2,2-3,8) %, N=500; control: 1,2 (0,7-1,7) %, N=500). Stage of development of embryos : late blastula.	CG	Kulikov, 1975
A119-5	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish	Sr-90, Y-90	3700000 Bq/L		0,3	2,59 Gy	Increase of the cells with bridges for irradiated embryos (6,0 (4,9-7,1) %, N=500) in comparison with the control (1,2 (0,7-1,7) %, N=500) by factor of 5. Stage of development of embryos	CG	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			embryos in experiment.						: late blastula.		
A120-1	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	37 Bq/L		3,00E-06	2,59E-05 Gy	No significant change in cells with fragments for irradiated embryos (8,4 (7,1-9,7) %, N=500) in comparison with the control (9,6 (8,3-10,9) %, N=500). Stage of development of embryos : late blastula.	NE	Kulikov, 1975
A120-2	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370 Bq/L		3,00E-05	2,59E-04 Gy	No significant change in cells with fragments in irradiated embryos (9,4 (8,1-10,7) %, N=500; control: 9,6 (8,3-10,9) %, N=500). Stage of development of embryos : late blastula.	NE	Kulikov, 1975
A120-3	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	3700 Bq/L		3,00E-04	2,59E-03 Gy	No significant change in cells with fragments in irradiated embryos (9,2 (7,9-10,5) %, N=500; control 9,6 (8,3-10,9) %, N=500). Stage of development of embryos : late blastula.	NE	Kulikov, 1975
A120-4	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in experiment.	Sr-90, Y-90	370000 Bq/L		3,00E-02	2,59E-01 Gy	Increase of the numbers of cells with fragments in irradiated embryos by factor of 1,7 (16,6 (14,9-18,3) %, N=500; control: 9,6 (8,3-10,9) %, N=500) . Stage of development of embryos : late blastula.	CG	Kulikov, 1975
A120-5	Fish eggs	*Esox lucius L. Pike*	Impact of Sr-90 and Y-90 on development of fish embryos in	Sr-90, Y-90	3700000 Bq/L		0,3	2,59 Gy	Increase of the numbers of cells with fragments in irradiated embryos by factor of 2,4 (23 (21,1-24,9) %, N=500; control 9,6 (8,3-10,9) %, N=500) . Stage of development of embryos : late blastula.	CG	Kulikov, 1975

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			experiment.								
A121-1	Zooplankton	*Daphnia magna Straus Daphnia*	Laboratory experiment Impact of uranium solutions on survival of Daphnia. Starting number of Daphnia in each vessel - 15.	Uranium, natural, also U-238	100 mg/L				Death of all Daphnia within 1-2 days	MT	Guskova , 1972
A121-2	Zooplankton	*Daphnia magna Straus Daphnia*	Laboratory experiment Impact of uranium solutions on survival of Daphnia. Starting number of Daphnia in each vessel - 15.	Uranium, natural, also U-238	10 mg/L				Death of all Daphnia within 7 days	MT	Guskova , 1972
A121-3	Zooplankton	*Daphnia magna Straus Daphnia*	Laboratory experiment Impact of uranium solutions on survival of Daphnia. Starting number of Daphnia in each vessel -	Uranium, natural, also U-238	5 mg/L				Death of about 40% of Daphnia, depression of reproduction	MT	Guskova , 1972

Identification NN.	Type of organism	Latin name, common name	Impact	Nuclide	Activity in water, Bq/L	Activity in tissues, Bq/kg	Dose rate, Gy/d	Dose, Gy	Effect	Effect Code	Reference
			15.								
A121-4	Zooplankton	*Daphnia magna Straus Daphnia*	Laboratory experiment Impact of uranium solutions on survival of Daphnia. Starting number of Daphnia in each vessel - 15.	Uranium, natural, also U-238	1 mg/L				Slight decrease in Daphnia population in 130 days,12-13 generations in the experiment; 15 - in the control.	MT	Guskova , 1972
A121-5	Zooplankton	*Daphnia magna Straus Daphnia*	Laboratory experiment Impact of uranium solutions on survival of Daphnia. Starting number of Daphnia in each vessel - 15.	Uranium, natural, also U-238	<0.5 mg/L				No effect on Daphnia survival and reproduction in 45 days	MT	Guskova , 1972