respiration (SIR). An optimal dose of glucose was added to 100 g fresh soil and incubated at 22 °C for 6h. The CO_2 evolution was measured in a Sapromat and converted into biomass carbon by calculation. Both C_{mic} results are given in µg C g^{-1} soil dry mass. Microbial basal respiration (R_{mic}) was determined in the same way without the addition of glucose and the results are given in µg CO_2-C g^{-1} h^{-1} g^{-1} soil dry mass. The metabolic quotient (qCO_2) was calculated from the results for R_{mic} and C_{mic} (R_{mic}/SIR-C_{mic} x 10^3) and expressed as mg CO_2-C g^{-1} C_{mic} h^{-1}. The C_{mic}/C_{bioorg} ratio reflects the C_{mic} in % C_{bioorg}.

The enzyme tests and biomass determinations were carried out according to Alef (1991) and Schinner et al. (1996). For the determination of arginine ammonification (ARG) moist soil samples were incubated for 3h at 37°C. Ammonium released by arginine deaminase activity (=arginine ammonification) was extracted with 2 M KCl, and determined colorimetrically after the indophenol reaction. The results are given in µg NH_4-N g^{-1} soil dry mass. Dehydrogenase activity (DHA) was measured with the 2,3,5-triphenyltetrazolium chloride (TTC) method according to Thalmann (1968). The moist soil sample was incubated TTC for 24 h at 30°C. After the reduction of TTC the triphenyltetrazolium formazan (TPF) was measured colourimetrically at 546 nm and the results are expressed in µg TPF g^{-1} soil dry mass. β-glucosidase

Table 1. Selected properties of soils in the oil exploitation area of the Upper Vozey oil field in Russian subpolar tundra region of the Komi Republic close to the Arctic Circle (Usinsk)

	Horizon[A]	Depth	DM	Oil-C	TOC	C_{bioorg}	C_{bioorg}	N_t	C_{bioorg}	pH[B]
		cm	---------- mg g^{-1} DM ----------				Oil-C	mg g^{-1}	Nt	
Moist mineral soil *(Histic Cryaquept)* under ruderal grass vegetation with oil contamination										
1.0	Oil & C	0-2	946	92.5	150.7	58.2	0.63	ND	ND	ND
1.1	C	-15	687	46.5	76.9	30.4	0.65	1.32	23.0	7.26
1.2	O	-30	255	33.5	363.8	330.5	9.87	5.83	56.7	5.79
1.3	Bg	-55	872	0.4	3.3	2.9	7.25	0.26	11.2	5.86
... without oil contamination										
2.1	C	0-10	616	0.9	48.3	47.4	52.7	1.98	23.9	7.06
2.2	O	-30	107	1.8	393.8	392.0	217	6.03	65.3	5.83
2.3	ABg	-42	818	0.03	10.5	10.5	350	0.59	17.8	4.59
Peat soil *(Sphagnic Cryofibrist)* without oil contamination										
3.1	Oi	0-30	215	2.8	499.5	496.7	177	4.69	105.8	3.73
3.2	Oe	-60	136	4.3	493.4	489.1	113	20.57	23.8	4.06
Peat soil *(Sphagnic Cryofibrist)* with oil contamination										
4.1	Oi	0-17	261	1.3	361.5	360.2	359	11.19	32.1	3.78
4.2	Oe	>17[C]	126	3.1	439.7	436.6	141	15.16	28.8	3.55
Moist mineral soil *(Histic Cryaquept)* under an open pine and birch forest with oil contamination										
5.0	Oil & C	0-5	134	3.8	349.3	345.5	90.9	9.53	35.1	5.47
5.1	O	-18	118	1.8	481.7	479.9	266	4.01	119.7	5.55
5.2	A	-38	574	0.1	96.7	96.6	966	4.93	19.6	5.68
5.3	Bg	-50	856	0.03	15.0	15.0	500	0.98	15.3	5.81
... without oil contamination										
6.1	O	0-15	177	2.9	389.0	386.1	133	8.32	46.4	4.42
6.2	A	-24	827	0.1	3.9	3.8	38.0	0.34	11.2	5.76
6.3	Bg	-47	856	0.02	2.9	2.9	145	0.34	8.5	5.96

ND: not determined, DM: dry mass, Oil-C: oil derived carbon, TOC: total organic carbon, C_{bioorg}: soil derived and biogenic organic carbon, N_t: total nitrogen

[A] according to Soil Survey Staff (1998)

[B] in 0.02 *N* $CaCl_2$

[C] oil-polluted-water table 10 cm below surface