Chemical Characteristics and Classifications for Thermal Spring at Yunokawa Onsen

Environment Science Laboratory Co., Ltd. #022

1	Applicant	Hideo Noguchi, CEO Noguchi Kanko Co., Ltd. 203-1 Noboribetsu Onsen-Cho, Noboribetsu-City, Hokkaido
2	Source of Spring	nokawa Onsen (Source: Yumoto Takubokutei Wells No.1 and Hakodate Waterworks Dept. Samegawa Wel
	Utilization Site	1-17-22 Yukawa Hakodate-City, Hokkaido

3	Explorations and Examinaion Results of Thermal Spring at Utilization Site						
(A)	Explorer and Examiner	:	Environment Science Laboratory Co., Ltd.				
(B)	Date of Examinations	:	October 22, 2008				
(C)	Water Temperature	:	52.6 C (Air Temperature: 22 ℃)	(D)	Flow Rate	:	N/A
(E)	Perceptual Examinations	:	Clear, Briny and Salty, Oderless				
(F)	pH	:	7.0	(G)	Radon(Rn)	:	N/A
4	Explorations and Examinaion Results of Thermal Spring at Laboratory						
(A)	Examiner	:	Environment Science Laboratory Co., Ltd.				
(B)	End of Exams	:	November 11, 2008				
(C)	Perceptual Examinations	:	Tint of Yellow, Briny and Salty, Odorless (examined 5 hrs after sampling)				
(D)	Density	:	1.0046 (20° / 4 ℃)				
(E)	pH	:	7.07				
(F)	Evaporation Residue	:	8.657g /kg (180℃)				

5 Components in Sample /kg: Quantity and Composition

(A) Cation		mg	mg	mg	(B) Anion		mg	mg	mg
Hydrogen Ion	H^+				Fluoride Ion	F^-	1.8	0.09	0.06
Sodium Ion	Na^+	1993	83.73	61.83	Chloride Ion	Cl^-	3891.	109.8	78.88
Potassium Ion	K^+	110.0	3.56	2.00	Hydroxyl Ion	OH^-			
Ammonium Ion	NH_4^+	1.3	0.07	0.05	Hydrogen Sulfide	HS^-	0.0	0.00	0.00
Magnesium Ion	Mg^{2+}	228.6	14.92	13.42	Thiosulfate Ion	$S_2O_3^{2-}$	0.2	0.00	0.00
Calcium Ion	Ca^{2+}	637.8	29.16	22.7	Sulfate Ion	SO_4^{2-}	704.7	14.67	10.54
Alminum Ion	Al^{3+}				Bicarbonate	HCO_3^-	892.8	14.63	10.51
Manganese Ion	Mn^{2+}				Carbonate Ion	CO_3^{2-}	0.7	0.02	0.01
Ferrous Ion	Fe^{2+}				Phosphoric Ion	HPO_4^{2-}	1.1	0.01	0.00
Ferric Ion	Fe^{3+}								
Total		2971.	140.2	100.			5492.	139.2	100.

(C) Free Components

Undissociated Components		mg	mmol	Undissociated Components		mg	mmol
Metasilicic Acid	H_2SiO_3	70.1	0.90				
Metaboric Acid	HBO_2	25.9	0.59				
Total		96.0	1.49				

Dissolved Substances (w/o Gaseous Agents) 8.559g/kg

Dissolved Gas Components		mg	mnol
Free Carbon Dioxide	CO_2	139.7	3.17
Free Hydrogen Sulfide	H_2S	0.0	0.00
Total		139.7	3.17

Total Elements 8.699g/kg

(D) Other Trace Elements	Alminum: 0.002mg/kg, Copper: 0.015mg/kg, Total Arsenic: 0.077mg/kg
	Manganese: 0.080mg/kg, Zinc: 0.005mg/kg,
	Errous Iron, Lead, Cadmium, Total Mercury : Undetected

6	Classification	:	Chloride Spring - Sodium, Calcium (Neutral Isotonic Hyperthermal Spring)
7	Contraindications and Associations	:	Listed in the box 5 on the Appendix.

November 17, 2008

Registered Organization, Registration No.: Hokkaido No.5
Environment Science Laboratory Co., Ltd.