

## Volcanic Gas at Mt. Hakkoda ---- its Generation Mechanism and Counter-Disaster Measures.

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On July 12, 1997, members of the Defense Force, in night maneuvers, fell accidentally into a depression, nearby a pasture, hole in the ground, and the 18 members including their colleagues who entered the site for rescue, lost their senses for breath difficulties, resulting to the death of three of them. The worked out investigations cover (a) geochemical studies gas, (b) geophysical prospecting, (c) comprehensive analyses of the collected data. It was clarified that the spouting and stagnant mechanism of the volcanic gas into a specific ground depression is caused by combined work of ground fissures developed in land-sliding areas, acidic spring water flowing underground, and carbon dioxide gas involved in the spring water itself.

### 1. Foreword

On July 12, 1997, members of the Defense Force, in night maneuvers, fell accidentally into a depression, nearby a pasture, hole in the ground and the 18 members including their colleagues who entered the site for rescue, lost their senses for breath difficulties, resulting to the death of three of them.

After this pitiful accident, the government of Aomori prefecture quickly organized, on September 9, 1997, the Special Investigation Committee for Volcanic Gas at Mt. Hakkoda, in order "to clarify the generation mechanism of carbon dioxide volcanic gas at Mt. Hakkoda" and "to contribute to future counter-disaster measures". For the next two years, they worked out the necessary study and data analysis, yielding the concluding reports on the field survey results and the permanent counter-disaster measures, as published in October 1999. The present paper will report briefly the work, starting from the preliminary field studies to the planning of counter-disaster measures, as obtained from the stated work. Further details of studies in various research field will be reported, respectively, later.

### 2. Items of investigation

The worked out investigations cover (a) geochemical studies on surface distribution of volcanic carbon dioxide gas, mechanism of their generation and stagnant, (b) geophysical prospecting of underground structures in which the volcanic gas penetrate to the surface spouting, (c) comprehensive analyses of the collected data.

### 2. 3. Results

It was clarified that the spouting and stagnant mechanism of the volcanic gas into a specific ground depression is caused by combined work of ground fissures developed in land-sliding areas, acidic spring water flowing underground