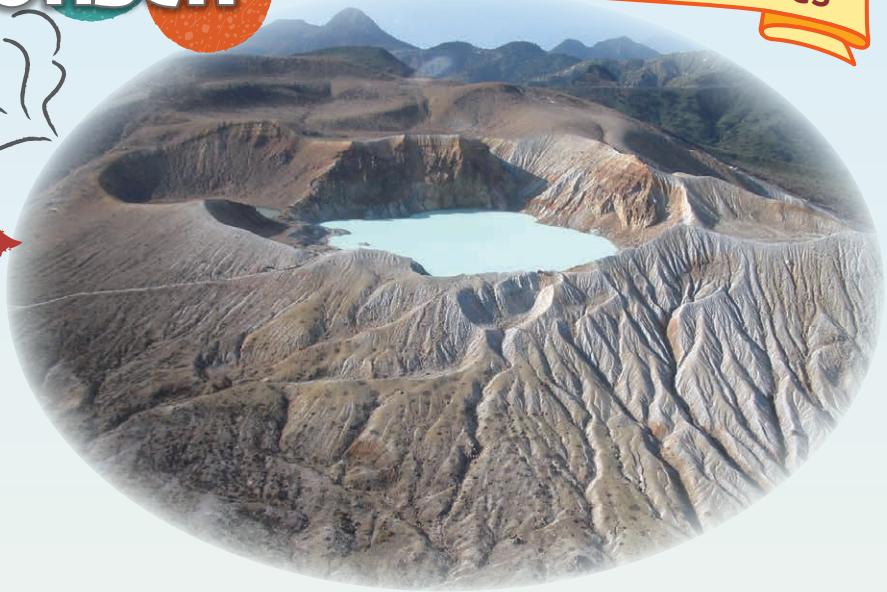


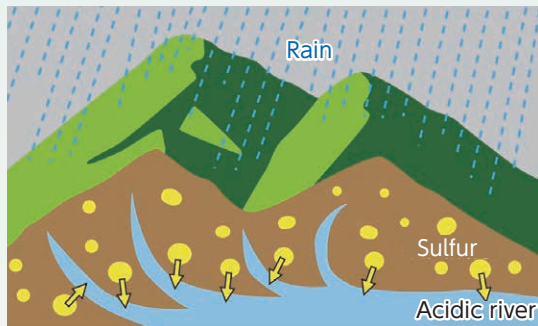
The Secret of Kusatsu Onsen

A Neutralization Project
Safeguarding People's Lives



Active Volcano Mt. Kusatsu-Shirane

Mt. Kusatsu-Shirane, an active volcano, is a mountain of sulfur. At its summit, which is barren of almost all plant life, is an emerald green crater lake. Rainwater seeps into the mountain through the lake and wells up from around its base as highly acidic water to form rivers and hot springs.



Mt. Kusatsu-Shirane's Blessing: Kusatsu Onsen

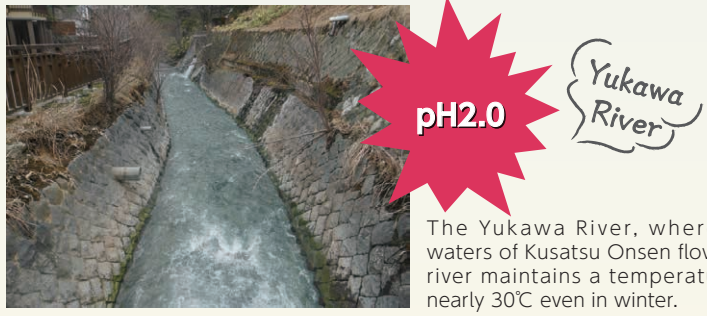
Kusatsu Onsen, one of Japan's major acidic hot springs, boasts the highest natural output of any hot spring in the country: more than 32,300 liters per minute or 230,000 barrels per day.

With a strong acidity of pH 2.0, Kusatsu Onsen's water is uniquely antibacterial and possesses multiple efficacies that have healed the bodies and souls of many over the centuries.



Yubatake (Hot Water Field)

"Yubatake," the symbol of Kusatsu Onsen



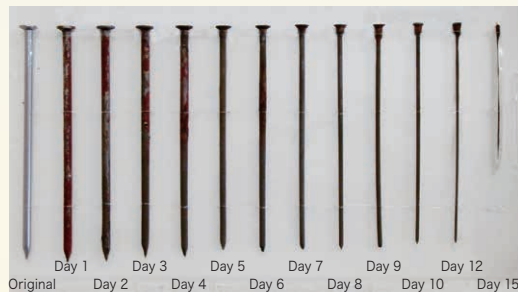
pH2.0

Yukawa River

The Yukawa River, where the waters of Kusatsu Onsen flow. The river maintains a temperature of nearly 30°C even in winter.

"Rivers of Death" Near Kusatsu

While the acidic waters of Kusatsu Onsen possess the efficacies of a hot spring, they also have a harmful effect on people's lives. The rivers issuing from Mt. Kusatsu-Shirane and the surrounding area have been a source of anxiety over the years for those living in the region due to their high acidity. In addition to the rivers' natural acidity, acidic wastewater flowed into them from local mines that gathered sulfur for use in such things as gunpowder. The extremely acidic waters of these small and medium rivers then flowed into the Agatsuma River, making it unusable by people in their daily lives and unsuitable for other living things. As a result, those living near the rivers came to call them "rivers of death."



A nail immersed in the acidic water of the Yukawa River over 15 days



Concrete immersed in the acidic water of the Yukawa River over a month

The Neutralization Project That Revived the Rivers of Death

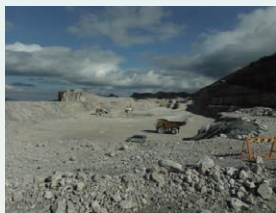
The neutralization project being carried out at the Neutralization Plant of Kusatsu was started in 1964, the first of its kind in the world. Its goal was to improve the water quality of the acidic rivers flowing into the Agatsuma River. The project introduces limestone powder into the Yukawa, Osawa and Yazawa Rivers, and the resulting neutralized waters then flow into the Agatsuma River by way of the Shirasuna River.



Neutralization Plant of Kusatsu



A World First !!!



Limestone mining



Limestone is stored in large silos at the Neutralization Plant



Limestone powder is mixed with acidic water drawn from the river



The resulting limewater is returned to the river to neutralize it

Shinaki Dam: Accumulating the Neutralization Product

The introduction of limestone powder into the Yukawa, Osawa and Yazawa Rivers by the Neutralization Facilities creates a neutralization product that the Shinaki Dam was built to accumulate. The dam was completed in 1965 with the cooperation of the residents of the Shinaki Area of the former Kuni Village.



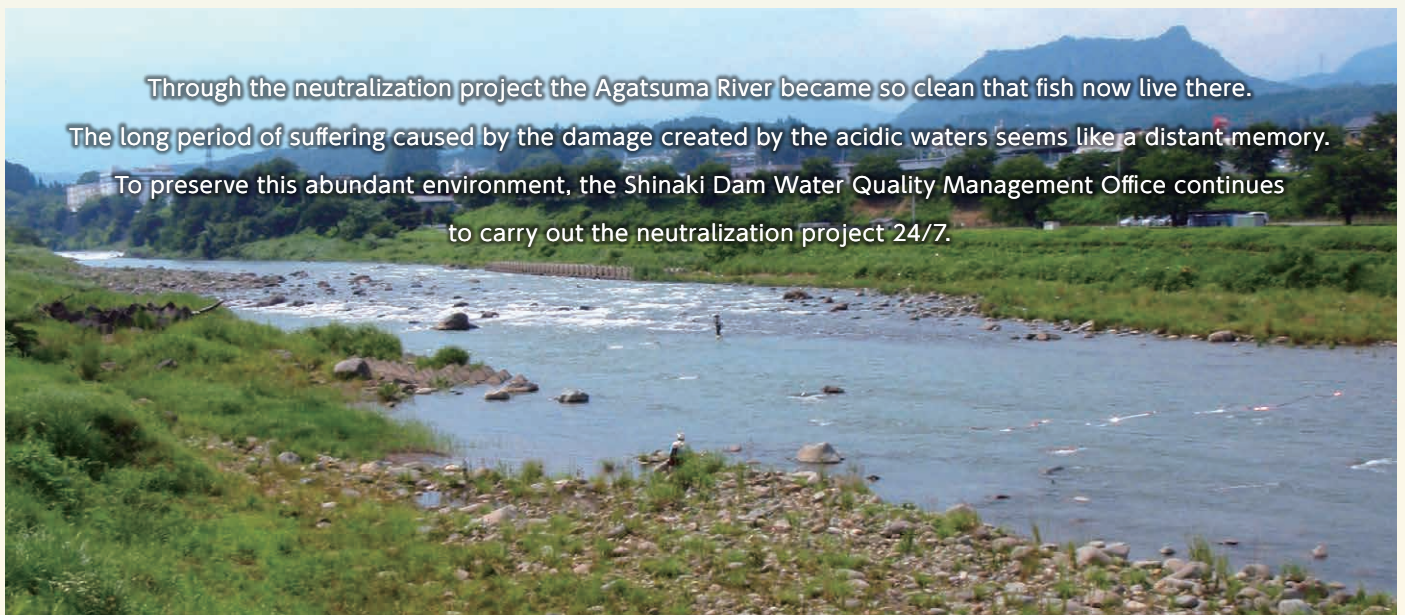
Shinaki Area of the former Kuni Village



Through the neutralization project the Agatsuma River became so clean that fish now live there.

The long period of suffering caused by the damage created by the acidic waters seems like a distant memory.

To preserve this abundant environment, the Shinaki Dam Water Quality Management Office continues to carry out the neutralization project 24/7.



Shinaki Dam Water Quality Management Office

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