Itai-Itai disease and the countermeasures against cadmium pollution by the Kamioka mine

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Abstract. The Itai-Itai disease case is one of four major pollution-related lawsuits occurring in Japan after World War II. This paper, which is based on investigations of the pollution source, the Kamioka mine, considers (1) the history of the disturbances to the environment caused by the Kamioka mine; (2) the Itai-Itai disease suit; (3) the pollution-prevention measures and methods of the Kamioka mine and refinery; (4) the reduction of cadmium pollution in the Jinzu River; and (5) the actual application of the “polluter pays principle”. The authors conclude that the court decision and the agreements between the victims and Mitsui Mining made it possible to control and reduce the damage caused by cadmium pollution and four additional, contributory factors.

Key words: Itai-Itai disease, Cadmium pollution, Kamioka mine, Countermeasures, Polluter pays principle (PPP)

1 Introduction

Osteomalacia, softening of the bones as a result of renal tubular dysfunction, is now commonly known as Itai-Itai disease. It attacks women who have borne several children; during its final stages, when patients can neither stand, walk, nor talk, all they say is “itai-itai” (Japanese for “It hurts! It hurts!”)—hence its common name. In one of the worst cases, a patient lost 30 cm as a result of pressure fractures of the vertebrae; and another patient suffered many fractures, 28 in the ribs alone.

The issue was recognized as serious when cases of Itai-Itai disease and renal tubular dysfunction were found among residents in a number of cadmium-polluted areas throughout Japan, most seriously in the district of Toyama near the Jintsu River but also in Tsushima, Nagasaki Prefecture, the Kakehashi River basin in Ishikawa Prefecture, and the Ichi River basin in Hyogo Prefecture.

The Japanese people have higher levels of daily cadmium intake and a higher concentration of cadmium in the renal cortex than any other group of people in
the world. Because high cadmium levels have been found in rice grains, it is reasonable to suppose that this is the route by which cadmium enters the human body, from which it follows that the problem of toxic pollution by cadmium is not confined to the locality in which the cadmium was originally dispersed into the soil.

In 1972 victims of Itai-Itai disease living in the Toyama district brought a case against the main polluters (the Mitsui Mining and Smelting Co.). After the court had reached a decision and made a judgment against Mitsui, the victims and the corporation held negotiations and agreed on three points: (1) that compensation should be paid to the sufferers of Itai-Itai disease; (2) that compensation should be paid to those whose fields and crops had been polluted, as well as compensating them for the detoxification of contaminated farm soil; and (3) that pollution prevention systems should be installed at the Kamioka mine and refinery. This last requirement has proved to be the most effective of the measures taken, as the company agreed to allow the victims, their lawyers, and interested scientists to survey and inspect the facilities without hindrance and at the company’s expense.

Subsequently, sufferers, lawyers, and scientists, every year from 1972, have carried out an annual inspection of the Kamioka mine and refinery. In particular, the unhampered on-site inspections, the collection of data and disclosure of information about the types of material involved in the process, updated reports on the quality of process water and the conditions of drainage and emission, and the state of the soil, groundwater, and by-products have been powerful measures in preventing further pollution.

This paper, which is based on the reports of those inspections, considers the following issues: (1) the history of the disturbances to the environment caused by the Kamioka mine; (2) the Itai-Itai disease suit; (3) the pollution prevention measures and methods operated by the Kamioka mine and refinery; (4) the reduction of cadmium pollution in the Jinzu River; and (5) application of the polluter pays principle.

2 History of environmental damage caused by the Kamioka mine

In general, a mining operation consists of three stages: (1) the mining process; (2) the ore dressing process; and (3) the refinery process. All three stages have an effect on the environment. Although the metal-mining industry has played an important role in the modernization of Japan, the extensive development of the industry has also been responsible for many instances of environmental disturbance and damage.

In 1874 the Mitsui Corporation bought the Kamioka mine; in 1886 it introduced modern technology; and in 1889 it brought all the Kamioka mine operations under the umbrella of one administration. Within a year (in 1890), the local air was sufficiently polluted by White’s rotary furnaces for the residents of Kamioka Town to lodge a complaint: This was the first instance of a formal protest by residents.