

Chap. 4 : minamata disease

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Minamata Disease

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The Minamata disease was the most massive pollution problem to strike Japan in the post-Second World War period. The total picture in relation to the epidemiology of the problem has yet to unfold. The number of victims and deaths produced has not yet been determined. Twenty-five years have come and gone since the disease was first discovered and the number of people adversely affected is still on the increase.¹ Further, no treatment for the condition has been discovered. Serious attempts to ferret out the cause of the original disease were shelved, and it was not until the occurrence of the same disease in another location that determined efforts were again undertaken in this regard. If it had not been for the second outbreak of the disease, no one would have bothered to look for the cause. The orientations assumed and the reactions exhibited by the business sector, governmental administration, the scientific community, and public opinion were all typical of the Japanese socio-economic situation in relation to pollution issues.

As the leader in the chemical industry field and the original Minamata disease polluter, Nippon Chisso's manufacturing facility in Minamata City is characteristic of the Japanese chemical industry sector, in which great efforts were made to adapt to various modes of Western technology. There were many chemical substances produced for the first time in Japan at the Chisso Minamata complex and the corporation maintained a tight hold on production secrets, to prevent competition from other manufacturers. Before the Second World War, this same corporation expanded into those nations colonized by Japan. Even though there were delays in Japan's capital expansion, the company built Japan's largest electro-chemical industrial complex, which provided the initial thrust for Nippon Chisso chemical industries in China and Korea. After the end of the war, the company seemed certain to collapse, but like the phoenix it rose again from the ashes, beginning the mass production of plastics from which it derived large profits because of its monopoly practices and the mass-consumption economy in which it operated. The Chisso Minamata complex, being representative of Japan's

chemical industries during the post-war years, proved again the importance of technological prowess in the successful production of chemical substances. The complex achieved the highest economic growth-rate in Japan and at the same time caused the greatest environmental destruction that the country has ever seen.

I. The Nippon Chisso Company: Beginnings

The village of Minamata, located on the west coast of southern Kyushu, was traditionally supported by rice farming and by a cove in the port which allowed the production of salt. All this was well established by the beginning of the twentieth century. Across the bay is Amakusa Island, which produced some coal; there was also a gold mine in the mountains. These materials were brought into Minamata village and wood and mountain products were shipped from the port. Otherwise, Minamata was no different from other villages found throughout the country.

With experience in a successful venture to establish Japan's first industrial carbide production, Jun Noguchi, a young college-educated electrical engineer, was looking for a site to construct a new carbide production plant that would use surplus electricity from a hydro-electric power plant he had helped build as a power source for the gold-mining operation in the hinterland mountain area. At about the same time, the salt production, Minamata's only local cash-earning industry, became a government monopoly and was about to lose its viability as a profitable enterprise. The leaders of Minamata village, sensing an urgent need for new industries, approached Noguchi and urged him to build the new carbide plant in the village. To the hesitant Noguchi, who maintained that there were a number of other good locations to site the plant, the village leaders offered to provide free, or at extremely favourable rates, the use of the land that had been used for salt production, together with industrial water and the port facility; they also offered to shoulder the cost of extending the power line from the power plant to the carbide production facility.

With these inducements, the company decided to build its factory in Minamata. Those who had been working in the coal mine and had been put out of work by the introduction of electricity were hired at low wages to work in the new Chisso plant. This was seen as another important reason for providing inducements to the Chisso manufacturing facility to come to Minamata. The furtherance of Japan's high-economic-growth policies, which were based on the exploitation of cheap local labour and instituted under the guise of industrial restructuring, had already begun with the introduction of the new Chisso factory.

The Nippon Chisso Company production facility began functioning under very favourable conditions, but the product itself did not sell well, since the demand for carbide was low; its main use was as a light source in night fishing. The company then began using carbide as a material from which to

derive calcium cyanamide, which was then used to produce metamorphic ammonium sulphate to be used as an agricultural fertilizer. In this manner the company was saved from going under, but, in the face of fierce international competition in chemical fertilizers, it was taken over by a railway concern and also bolstered by the injection of Mitsubishi Corporation capital. For this small fertilizer production facility, the advent of the First World War meant a firmer grasp on survival. The importation of fertilizers was halted and Chisso gained a monopoly position in the domestic market. The losses incurred at first were covered and Japan's chemical industry became prosperous. Nippon Chisso began with capital assets of 1 million yen, and in 1920, after the First World War, had assets of 22 million yen; within the ensuing half-year period it was paying dividends at the 104 per cent level. Immediately after the First World War, Noguchi visited Europe and on that occasion decided to introduce the new Casale ammonia synthesis technology into Japan, although it was still at the pilot-plant stage. This was for Japan the first experience of ammonia synthesis and the first introduction of high-pressure gas technology.

In the depression after the First World War, it was difficult, from both a managerial and technical point of view, to construct a new manufacturing facility, based upon new technology, that would also be able to produce a greater amount of fertilizer in a shorter operating period. In this regard, the Nippon Chisso technical staff worked very hard to overcome various difficulties. In 1923 the first ammonium sulphate compound was produced at the Nippon Chisso Nobeoka complex. From that year on, management was able to weather the depression period with a relative degree of calm. Nippon Chisso was not only dominant in the expanding fertilizer market but also based its solvency on the provision of inexpensive hydro-electric power. Since the major hydro-electric power plants in Japan were provided and controlled by the major Japanese *zaibatsu*, Nippon Chisso went into Korea, on the basis of hydro-electric power-plant provision, at a time when many Japanese companies were contributing to the colonization effort. At the same time, the Nippon Chisso Minamata facility began using the Casale process for the mass production of ammonium sulphate, a method that had been successfully introduced at the Nobeoka facility. Although there were many explosions resulting from the use of this new high-pressure gas process, in 1927 ammonium sulphate production was successfully instituted, and this gave Nippon Chisso the new status of a rising capital venture based upon the cyclical production of fertilizer compounds. In that same year construction of the Nippon Chisso Hungnum (Korea) facility was started. It was to become the largest electrochemical compound production facility in Asia, with the largest attendant electric power station seen at that time. In 1930, the Hungnum plant started operations, and the corporate advance into the colonies of Japan was assured. In the trial and initiation periods of the 1920s, the fertilizer production facility was a major pillar in the recently rising chemical industry. The newly founded Nippon Chisso company was able to weather all pressures from both inside and outside the country, and to take a major role

in the chemical industry through the technical prowess that comes with experience. Although the original technology was introduced into Japan from outside, the company was able to expand and increase both its base of operations and its production facilities so as to be ready for the next series of developments, which originated from its own technology.

II. The Beginnings of the Carbide Organic Chemical Complex

It was in 1930 that Japan's chemical industry turned to organic chemical compounds derived from calcium-carbide-generated acetylene. It was known at that time that acetylene blown over mercuric sulphate would pick up one water molecule to produce acetaldehyde. Industrial production was late in coming but Nippon Chisso developed its own techniques and produced not only acetic acid, which is a direct derivative of acetaldehyde, but also, on an experimental basis, such downstream products as ethyl acetate, cellulose acetate, vinyl acetylene, acetone, butanol, and isooctane. From the introduction of foreign technology into Japan came unique methods suitable to the conditions in Japan and, on the basis of this, effective policies were developed. In this manner the development of organic chemistry in the factory placed Chisso on the most advanced chemical engineering level.

Production of the new product was first tried on an experimental basis at the Minamata facility, and then full-scale production was initiated. The same production techniques were then used in other installations, such as the one in Hungnum, Korea, with total output increasing very rapidly. These technical advancements were made possible by the highly trained technicians and workers at the Minamata facility. For instance, unless a person was proven to be among the top graduates of the Department of Engineering at Tokyo Imperial University, where the highest educational levels in Japan were to be attained, he would not be allowed to sit for the employment examinations at the Minamata complex. The same thing was true for the regular workers who sought employment. Only the very best graduates of junior high schools were employed on a probational basis as assistants to company staff; then, only after the probational period had been successfully completed were they hired as fully fledged factory personnel. Noguchi would say that factory workers should be used like cows and horses, and in fact they were treated like animals, being made to work under the most dangerous conditions and with very little remuneration. In the experimental pilot plants, there were often explosions and accidents, and dangerous materials were kept on hand, and, unless the workers acknowledged a willingness to work under conditions where they would be risking their lives, they were not employed. Through the pre- and post-Second World War periods, the employment of high-quality low-paid workers was the basis upon which Japan's industrial strength was built, and the Minamata complex was a perfect example of this phenomenon. If the workers were able to endure the most severe working conditions, they would in all likelihood be given the chance of being appointed as experts in the

Chisso manufacturing complexes built in Japan's colonies. Working in the Minamata factory was considered to be one of the best tests of human endurance.

As the Chisso Minamata production facility grew, the village of Minamata prospered. With an increased population, the village became a town and then, during the Second World War, a city. The economic prosperity of the city depended on the Chisso plant, and public investments in roads and other infrastructures were prioritized around the manufacturing plant as the basic unit of industrial expansion. The town grew around the factory and the fundamental nature of the pre-programmed urban development was determined before and after the Second World War. The consciousness of those living in the city developed in such a way that they began to understand themselves as sharing, on the community level, the destiny of the Chisso chemical plant.

In the 1930s, when militarization in Japan was on the upswing, industrialization in Japan's colonies was also in an expansionary phase. In the early colonization period, the Nippon Chisso capitalists were closely allied with the military power of Japan that ruled the colonies. In this regard the company found itself in a favourable position or at least to have the same favoured status relative to facility construction pre-conditions, labour-force supply, and resource procurement as parallel *zaibatsu*-financed manufacturing facilities. In 1934, the company became independent of Mitsubishi capital, with which it had been associated from its inception, and then went on to establish its own *zaibatsu* in conjunction with the Kogyo and Chosen banks. Since Japan lacked natural petroleum resources, the energy for aeronautics and the materials that were otherwise derived from different aspects of petroleum chemistry became very important to the military, but the only alternatives had to be produced from acetylene-chemistry-based organic compounds. In this context Nippon Chisso was in a position to develop materials that were badly needed by the military, and with this background the company forged ahead in Korea and China. Acetaldehyde, which was produced from acetylene, was a key material, and Nippon Chisso was well advanced in the field of acetylene chemistry. In 1938, I.G. Farben, one of Germany's monopoly capitalists, announced the production of a vinyl chloride plasticizer, and in 1941 the Minamata plant successfully produced the same material. This was the only vinyl product made by Japan before and during the Second World War, but this fact alone indicates the relatively high level of acetylene chemistry that had been achieved in Japan.

It is an undeniable fact that the initial plans of Nippon Chisso were oriented toward the development of large-scale hydro-electric power-generation projects and major machine-industry capacities in relation to the construction of dams and hydro-electric generation projects, especially in Japan's colonies. However, since these technological pursuits required large-scale human labour resources and were also based on excessive human suffering, new developments in the machine-engineering and transportation fields were not forthcoming.

All the waste products that were the result of the rapid expansion of the

Minamata production complex and of other manufacturing ventures were dumped without treatment into Minamata Bay, where they destroyed the fishery resources. The fishermen of Minamata brought their protests to the company many times but they were no equal to this massive industrial giant backed up by a powerful military establishment. The fishermen received compensation twice, once in 1926, and then again in 1943, at that time with the stipulation that there were to be no further demands on the company for compensation. The fact that the second series of negotiations took place during the war, and that the conditions for compensation included a demand by the company that no further requests be made, indicates the degree to which the aquatic environment had already been destroyed by the discharged wastes. One of the causes of Minamata disease was the company's monopoly power, which was characteristically blind to the damage produced by unbridled technology, as efforts were made to increase production without any regard for the problems caused to the human environment.

III. Recovering from the Defeat of the Second World War

As a result of Japan's defeat at the end of the Second World War, Nippon Chisso lost all of its overseas assets—a total of 80 per cent of all assets held. The Chisso *zaibatsu* was ordered by the occupation forces to disband, and the Minamata complex had been destroyed by bombing during the war. However, out of this destruction the Minamata complex, which had a long-standing tradition of high technology combined with the samurai spirit, came back to life like the mythical phoenix. In the period of near starvation immediately after the war, food production was the highest priority, and for this the production of ammonium sulphate was needed as an agricultural chemical. In this situation the Chisso complex restarted production two months after the war ended. The workers went to villages with ammonium sulphate and salt to exchange for food. In this context also, the complex began again the production of acetaldehyde from acetylene. By employing the hydro-electric power-generation stations that had not been so heavily damaged during the war, the fertilizer and carbide electric hearth facilities recovered quickly. At the same time, one of the typical consumer products imported was polyvinyl chloride plastic. In the post-war period companies imported plastic-coated electric wire from the United States and reprocessed the coverings into nylon sheets and belts, which sold very well. The only installation in all Japan that could produce polyvinyl chloride was the Chisso Minamata complex, and in 1949, when the occupation army granted permission to reopen the facility, it once again marketed a monopoly product. The workers from the Chisso facilities in Japan's former colonies returned to Minamata and began energetic preparations for the rapid production revival that was to begin in the 1950s. In the confusing period after the war, the Minamata complex technicians worked very hard and, on the basis of their knowledge of acetylene-derived acetal-

dehyde, in 1953 they successfully produced DOP, which is an essential plasticizer for the production of PVC.

The technical and commercial monopoly in relation to the expanding Japan PVC market was held through occupation army orders by American technology and capital, but the monopoly on the production of DOP for the Japanese market was fully retained by the Minamata complex. Within the context of the competitive 1950s, especially in relation to greatly expanding PVC markets, the Chisso Minamata complex was able to rebuild itself with phenomenal speed. For the production of octanol, the raw material from which DOP is made, the dual-carbon-atom acetaldehyde molecule was modified through a very sophisticated attachment of four more molecules. All of this was based on the long experience of acetylene chemistry maintained since before the war. Only the Minamata complex retained this high-level capacity for chemical synthesis, and because of this there were no other chemical companies able to recover so fully during that difficult period. It was in this way that the Minamata complex experienced a second golden era during the 1950s and regained a leading position in Japan's chemical industry. The Minamata complex, able to rebuild itself through the creativity of its personnel and the strength of its technology, stood in stark contrast to the old *zaibatsu*-supported chemical companies which, after the war, sought to revive their technological prowess through the purchase of foreign technology from the USA and other countries.

During the period when the Minamata complex was enjoying its greatest economic success, 60 per cent of all city taxes came from the chemical company and other related income sources. The mayor of the city was a retired director of the complex and a majority of the city council members were related in one way or another to the manufacturing facility. In the post-war period of so-called democratic politics, the city of Minamata was structured along typically feudalistic interactions and relationships centring around the chemical company and its manufacturing complex. Everyone knew that the level of economic prosperity enjoyed by the city depended on the rise and fall of the chemical company.

In the 1950s, the Minamata complex was able again to increase its capacity for the production of acetaldehyde and PVC and through this went on to sustain the largest production capacity in Japan. For production purposes, the company made use of large amounts of mercury compounds as reaction catalysts. The increased volume of production wastes was discharged into Minamata Bay without any treatment, and the aquatic environment was damaged even more than before the war, with devastating effects on the fishery industry there. The number of dead fish in the water increased and the number of fish caught was once again reduced. The local fishermen's association went to the chemical company for the third time to negotiate compensation. They managed to extract further amounts of money from the management, and exchanged certain areas of the bay with the company for use as reclaimed land, but all of these concessions were on condition that the asso-

ciation never again lodge protests with the company over company-induced pollution problems. At about this time people living in the city began noticing a strange new phenomenon, in which cats living in the city would go through a frenzied dance and ultimately throw themselves into the bay. The fishing community named this phenomenon "the suicide-prone group of dancing cats," and began to wonder if it did not portend misfortune in the future.

IV. The Discovery of Minamata Disease and the Difficulty in Determining Its Cause

In May 1956, four patients suffering from a yet unheard-of disease were brought to the city hospital. They all had common symptoms such as severe convulsions, intermittent loss of consciousness, repeated lapses into crazed mental states, and then finally permanent coma. Then, after the onset of a very high fever, they would die. Dr Hosokawa, the director of the hospital, began an epidemiological survey of the immediate area in co-operation with local medical associations and health centres. The same type of patients had indeed been discovered in the fishing villages surrounding Minamata City and it was determined that 17 people in all had so far died after showing the same symptoms. This initial stage was characterized by a profound sense of shock at the high death-rate.

The initial survey indicated that the disease had not occurred suddenly but had been noticed by doctors before, except that it had not been recognized as a new disease. The one factor that was common to all patients was that they ate large amounts of fish from Minamata Bay. At first there were suspicions that the disease was contagious but this fear was laid to rest after more intensive surveys had been taken. Then there were thoughts that the cause might be related to toxic substances. At this point efforts at determining the cause of the disease were handed over to a medical research group at Kumamoto University in Kyushu. The group continued investigations for about two years but was not able to discover any definitive cause for the disease. It was, however, deduced that the fish and the shellfish in Minamata Bay were poisonous: toxic symptoms did in fact develop in laboratory animals which had been fed these same poisonous fishery products, but their symptoms seemed to be completely different from those seen in human patients.

The initial survey indicated that the common conditions surrounding all the patients made it almost certain that the problem was related to the Chisso Minamata chemical complex, but it was completely taboo to speak of this possibility in the community, with its complete economic dependence on the facility. The fish from Minamata Bay were poisoned to a much greater extent than fish taken from other locations, and all of the wastes from the chemical complex had been discharged into the bay for a very long period of time. Waste sludge taken from the bay contained so many different kinds and such huge amounts of poisons that there was no telling which of them was the

cause. The sludge contained great amounts of manganese, selenium, and thallium, substances which could conceivably be related to the disease, although animal experiments resulted in very different symptoms. The research group asked the chemical company to indicate what substances were being used for production synthesis apart from the materials contained in the waste discharge, but the company was unwilling to co-operate in this regard. Furthermore, the engineering department of Kumamoto University, which had more precise information on the inner workings of the Minamata chemical complex, was predisposed not to co-operate with the medical research group. Finally, when the medical research team indicated that the probable cause of the Minamata disease was heavy metal poisoning, the chemical company provided their own report to dispute this theory.

Then, after two years of survey work, the medical research group was able to eliminate every pollutant one by one, until they came upon mercury as the last heavy metal in the list. At that time they did not know that mercury was employed in massive amounts in the chemical complex, and they also presumed that the company would probably not waste mercury, for it was a very expensive material. The company kept the use of mercury a production secret, although industrial circles and engineers were aware of it. There were massive amounts of mercury in the sludge taken from the bay, as well as in the poisonous fish and in the patients who had died of the disease. The epidemiological distribution of the disease among the human population was the same as the distribution of poisonous fish in Minamata Bay. The characteristics of the disease were the same as those encountered in alkyl mercury poisoning. The medical research group, which was severely criticized by the Chisso chemical company, continued its survey efforts for another year and in July 1959 came to the interim conclusion that mercury was the most probable cause of the Minamata disease.

V. Social Trauma and the Fishermen's Riot

Three years had passed since the discovery of the disease, and the local fishermen's groups had had no grounds for expressing their pent-up resentment against the chemical company, because of the lack of hard evidence as to the cause. When, therefore, it was heard that the disease could possibly be the result of an organic mercury discharge, they exploded in anger. It was obvious that the managers of the chemical company would flatly and indignantly deny any culpability for the problem, stressing all the time that they had not discharged mercury, even though mercury was in fact essential to their chemical reactions. But the fishermen, concerned that their fish were no longer saleable and strengthened by the medical statement in their belief that the chemical complex was the cause of the disease, went again to the company management to demand compensation. At this time there were new disease patients discovered in an area along the sea-coast where the company had relocated its waste drainage pipes away from the original discharge loca-

tion. As a result, fear spread to all areas of the Fushimi Sea and fish taken from the sea could no longer be sold because of fear of contamination. The economic base upon which the livelihood of the fishermen was built lost its viability, and the once proud and prosperous fishermen of the Fushimi Sea became beggars and wanderers.

From the summer and on through the autumn of 1959, the Minamata Fishermen's Association and the Fushimi Sea Fishermen's Association demanded compensation from the company for damage perpetrated by the chemical complex. The company refused to make any payments on the grounds that the cause of the disease was not understood to be related to the operation of the chemical complex. However, the company did decide to pay a small amount of sympathy money. During these negotiations with the fishermen the company would call in the police without hesitation. The social tensions in and around Minamata City rose to a crescendo, and on 2 November 1959, 4,000 Fushimi Sea fishermen congregated to demand a National Diet members' inspection of the polluted area. On the way home from this rally they broke into the grounds of the chemical complex and destroyed office equipment. This event was magnified by the national news media and the Minamata disease at last came to the attention of the Japanese populace as a whole, some three-and-a-half years after it was discovered. With the Minamata chemical complex labour union in the forefront, many groups, including the Japan Socialist Party, criticized the fishermen's riot. If this action had not been taken by the fishermen, the Minamata disease would never have become national news.

The then International Trade and Industry Minister, Hayato Ikeda (who in later years as Prime Minister initiated Japan's high-economic-growth policies) criticized the publication of the Kumamoto University research group's organic mercury theory, saying it was the cause of social conflict. As they were less than willing to make public any disagreement among members as to the relationships between organic mercury and the chemical complex effluent, the Ministry of Public Welfare's Minamata disease research group could only provide a very ambiguous and non-conclusive report, after which the said group was immediately disbanded. On the basis of very cursory and incomplete surveys of the problem, scholars and other public personages commissioned by the chemical company and the Ministry of International Trade and Industry came up with all kinds of differing theories as to possible causes of the Minamata disease.

During this period, Dr Hosokawa, the director of Minamata City Hospital, while paying special attention to the treatment of disease patients, was also very interested in the organic mercury theory espoused by the Kumamoto University research group. He carried out animal experiments using cats, and, by feeding them the waste effluent from the chemical company's acetaldehyde production unit, was able to induce Minamata disease symptoms in them; he was later able to confirm the presence of disease through autopsy and pathological examination. The company executives were surprised by the fact that Dr Hosokawa, the company doctor, was doing this kind of re-

search, but, while they forbade him to continue with these efforts, they used certain excerpted portions of his research report to support company contentions that the chemical production effluents were not to blame. As of October 1959, the Chisso Minamata Chemical Company was fully aware of the fact that the Minamata disease was related to the effluent discharge from the acetaldehyde production unit, but since this production unit was the keystone for all organic compound production processes, the company continued, in its relations with the outside world, to deny culpability.

By the end of 1959, as a result of intervention by the prefectural governor, the company decided to pay a total of 100 million yen (about US\$27,800 at 1959 rates) to the fishermen's associations on the condition that the cause of the disease be discussed no further. At the same time it was decided that the Minamata Disease Association should be paid condolence money at the rate of 300,000 yen (\$830) for each death caused by the disease and 100,000 yen (\$278) for each living victim. The company emphasized that the money was only meant as condolence for people in trouble, and was not to be construed as an admission of culpability. However, the articles of negotiation prepared by company management as a basis of an understanding with the disease victims included both a prohibition on any further demands for compensation, even if it should be determined that the disease was caused by company-produced effluents, and a clause providing for an end to compensatory payments should it be proven that the disease was not related to production effluents. From these facts alone, it can be easily surmised that the company was fully aware of the cause-and-effect relationships between production effluents and the disease, and negotiated for small condolence payments on the basis of this knowledge. The government's Ministry of Social Welfare established a Minamata Disease Patient Examination Council, composed of selected medical practitioners, in order that patients could be screened so as to qualify for company-provided compensation. Only officially designated Minamata disease patients can qualify to receive money from the Chisso Chemical Company.

VI. Counteraction and Unconcern

Public opinion was critical of the fishermen's direct action against the chemical company, though thinking varied as to the purported cause of the disease. Therefore, with the disease victims actually receiving monetary compensation, it was thought that the social conflict surrounding the Minamata disease had come to an end. With the start of the 1960s the problems laid bare by the Minamata disease were forgotten because of the overshadowing political and foreign-relations dimensions of the Japan-United States Security Treaty. The fishermen who were involved in the riot were punished. In order to come to some fair and definitive conclusion as to the causes of the disease, two third-party research groups were formed, one by the government and the other by the Japan Medical Association. Because of lack of funding the government

group was disbanded within the year without reaching any conclusions. In spite of the fact that Dr Tamiya of the Medical Department of Tokyo University—Japan's supposed authority on the subject, who was supported by the Chisso Chemical Company and other mercury-handling industries—was named convenor, the Japan Medical Association group was disbanded in 1962, also without reaching any conclusions. In this manner the issue was neutralized without the problems really being confronted.

Governmental funding for the Minamata disease research group at Kumamoto University was cut off, but the university continued its efforts to discover the causal mechanisms involved in the disease. In 1962 hygienics professor Irigayama was able to separate methyl mercury compounds from the catalytic wastes derived from acetaldehyde production processes. He made it very clear that these wastes were the cause of the Minamata disease, but he was ignored by much of the academic community. At the community hospital attached to the Chisso chemical complex, Dr Hosokawa was working on orders from the company to provide evidence that would counter the methyl mercury poisoning theory, but he was able to convince Chisso executives that his original research should be continued in order that the Minamata disease cause be determined on the basis of company-developed methods. In 1962 Dr Hosokawa came to the same conclusions about the cause of the disease as Kumamoto University's Professor Irigayama. However, the Chisso Company ordered that these findings be kept secret. At about the same time the Kumamoto prefectural government was doing research on levels of accumulated mercury found in human hair as indicators of mercury contamination in the body. The results of those efforts indicated high levels of mercury contamination in fishermen and their families who were living in communities surrounding Minamata City, but mercury contamination was also found in island communities in the Shiranui Sea. Unfortunately the results of this research were not announced and they passed into oblivion. Because of the heavy criticism that was brought to bear against the organic mercury theory advanced by Kumamoto University, Minamata disease recognition and designation was limited only to those patients where very special and obvious methyl mercury poisoning symptoms were recognizable as medical textbook cases. At the same time it must be remembered that the diagnosis of the disease in living patients was made for the purpose of getting monetary compensation from the chemical company, and these factors produced their own restrictive sociological consequences. As a result of these factors, there were no new disease patients discovered for a few years after 1960, and it was thereby concluded that the Minamata disease had run its course and was no longer a problem. During the early 1960s, then, the problems related to the Minamata disease were thought to be things of the past, and no more attention was paid to the particular issues involved. In Minamata City the greatest concern of the people had turned to a long strike in which the labour union was fighting a Chisso company plan to rationalize operations, but the company was victorious in that it was able to divide the labour union into smaller groups. Owing to a combination of all these factors, the

problems of the Minamata disease were forgotten, and the victims themselves also wished to be left alone.

VII. Rediscovery of the Minamata Disease in Niigata

In June 1965, several patients who exhibited the same symptoms as seen in the Kumamoto Prefecture Minamata disease were discovered among fishermen living along the lower reaches of the Agano River, on the outskirts of Niigata City in Niigata Prefecture, a location far away from Minamata. This was the famous second Minamata disease, and methyl mercury was discovered in the victims' bodies as well as in the fish that they were eating. Along the upper reaches of the Agano River, and also in the area of the river mouth, there were two more acetaldehyde production plants. The second Minamata disease was recognized at an earlier stage and therefore there was a lesser degree of contamination than in Minamata, but even so, in the year of its discovery five deaths were attributed to the disease and 26 persons were designated disease patients. Even though mercury was very clearly the cause of the problem, the task presented to the newly formed Niigata University Medical Department research group in determining cause-and-effect relationships was by no means an easy one. In the areas surrounding the highly industrialized city of Niigata, besides the two above-mentioned acetaldehyde production plants, there were several other manufacturing facilities that used mercury; to add to the complications, mercury-based agricultural chemicals were also widely used, and therefore had to be considered as possible disease vectors. Furthermore, in 1964, the year before the discovery of the disease, there had been a major earthquake in Niigata, and it was suspected that there might be some relationship between that quake and the development of the disease the following year. In this way the research group ruled out, one by one, each of the many possible causation theories through the application of careful investigatory techniques. In the spring of 1966, the research group named, as the probable cause of the disease, the methyl mercury waste effluent from the Showa Denko Company's Kase factory, located on the upper reaches of the Agano River.

From this point on, in exactly the same manner as with the first Minamata disease, an identical course of events unfolded. The industry-related government departments evolved their own theories to counter that of the university research group, pressured the research group to hold back on publicity, and cut down on research funds. Scholars receiving trust funds from industry sources would produce differing opinions that resulted in support for industry. When university medical department research scholars were called before the National Diet to give testimony on the problem, high government officials would secretly try to have them obscure the cause-and-effect relationships. The situation was exactly the same as with the first Minamata disease. At long last, after a year of this kind of deviousness, research firmly established the fact that the disease was caused by the effluent output of the

Agano River Showa Denko plant. Industry responded by indicating that even if the government found them at fault, they would not abide by any ruling. Furthermore, since the university research group's findings were a year-and-a-half old, and the government was still in the process of making its own determinations, the research group's findings could not be called official.

Among the Minamata disease victims who could no longer abide by the government's ineptitude and indecision were the extended Miike family from Niigata, a group who had lost more members and suffered more from the disease than any other. This clan decided to take their case to the civil courts in order to obtain reparations for the damage done to them and in order to establish responsibility and define the cause-and-effect relationships. These people, whose incomes were from fishing and farming, were among the lower social classes, and throughout their family history they had never gone to court, which for them was a place to be feared and avoided. But having no other recourse, they were forced to take this course of action, which for them required a tremendous amount of courage. As for the lawyers involved, this case required scientific knowledge in order to pursue litigation over the cause-and-effect relationships, and as such was a new and challenging experience. The lawyers entertained no hopes of success from the very beginning. This was the first time that an environmental destruction case had gone to court in the post-Second World War period. The lawyers were forced to study elementary chemistry from high-school textbooks, and, since this was the first such case, they sought the co-operation of scientists, and proceeded with the full knowledge that there would be a great deal of difficult scientific material to contend with, and that they could expect a powerful counter-attack from corporation lawyers. After presenting their initial brief in court, the Niigata victims of the Minamata disease visited the victims of the Itai-itai disease (caused by severe cadmium poisoning affecting the bones) in Toyama Prefecture, and then met the victims of the Minamata disease in Minamata City. Through this they learned more of the history of environmental destruction in Japan and at the same time offered great encouragement to pollution victims all over the country. After this visit, the Itai-itai disease victims took their own case to court. In 1968, with the visit of the Niigata victims to the Minamata area victims, a citizen-based victim support organization was begun, and this organization has continued caring for Minamata disease victims up to the present time. At the same time, the First Chisso Minamata Chemical Company Labour Union, which had split from the original labour union in 1959, made a statement of support for the Minamata disease victims known as the "Shame Resolution." This was the first time in the company's labour-relations history that the union evaluated as "shameful" the action taken against the fishermen who had trespassed on company property. These various actions and movements by the victims of the Niigata disease brought many pollution-related problems back into the national consciousness after they had been forgotten for some time. The Minamata victims were encouraged by the Niigata victims, who were able to walk with pride even though they were diseased. The Minamata victims, supported by a citizens' organiza-

tion that represented a small minority at the time, were then once again able to begin their own series of actions.

VIII. Government Understandings, Renegotiations, and Interventions

In September 1968, a full 12 years after the initial discovery of the Minamata disease, the government gave full recognition to the cause-and-effect relationships involved in the disease problem, and publicly acknowledged that the disease resulted from environmental destruction. However, during this same 12-year period, the Chisso Minamata complex had lost its leading industrial role in the fields of electrochemical and organic compound chemistry, for within the context of the social forces at play in the 1960s, and in relation to the rapid advances made by the up-and-coming petrochemical industry, the Chisso Company was unable to accommodate itself to rapid movements in the chemical and allied fields and thereby became a second-class enterprise. The problem lay basically with the company's sense of technological nationalism and an overemphasis on corporate pride; these factors became the brake that stopped the company making the necessary change-over to petroleum chemistry. The citizens of Minamata City began to fear for the future of the city as the company began to decline in importance, and insult was added to injury when the government recognized the company's mercury-laden wastes as the cause of the Minamata disease. For the sake of the future of Minamata City, the majority of the people living there hoped that the pollution problem could be solved without friction and with a lessened burden on the company, and therefore sought a community consensus. The national, prefectural, and city governments had much the same attitude as that of the citizens of Minamata City, out of a concern for the consequences of their inaction and irresponsibility as reflected in 12 years of ineptitude and non-involvement in efforts to find a solution. The victims, who were demanding both clarification as to responsibility and negotiations for reparations, became, as a result of their demands, an isolated minority within the context of that special social climate. The Chisso Company refused to negotiate directly with the victims, indicating that negotiations could only take place through a third party such as the national or prefectural government. Seen from a historical perspective, it is a well-known fact that third-party negotiations, especially in relation to environmental pollution, end by favouring the industrial polluter at the expense of the victims of the pollution; a good example of this is the sympathy money negotiations that took place in 1959.

The negotiations in this instance seemed to take much the same direction. Minamata City administration personnel went around to the many disease victims in the city to persuade them that they should sign the white paper proxy that required compliance with the conclusions reached by the mediation committee consisting of three specialists appointed by the Ministry of Public

Welfare. (However, the original letter was written by the Chisso Company requesting that the government administration take up the matter.) The majority of the Minamata disease victims signed the proxy, but there were a few who, remembering the results of third-party negotiations in the past, refused to sign. In this way the victims' organization was divided into two groups, those who signed and those who refused to sign the proxy. As time went on the majority of victims who agreed to sign came to be known as the third-party "trust" group by the Ministry of Public Welfare and the minority that refused to sign came to be called the "lawsuit" group, for they were the ones who began preparations to take their case to the courts, following the example of the Niigata victims. In implementing its policy the Ministry of Public Welfare established a mediation committee consisting of a lawyer, a government administrator, and a doctor, and proceeded with preparations for negotiations on the basis of precedents established in relation to labour disasters. However, this method of setting up negotiations for compensation was inadequate, not only for theoretical reasons but because, first, it did not assign responsibility for the disease and, second, the three members of the committee were not adequately knowledgeable about the Minamata disease itself.

IX. Taking the Minamata Disease Case to Court and Citizen Support

The minority group of victims who decided to take their plea to court therefore chose the hard road, as in the Niigata situation. Because there were no laws regulating industrial activity in Japan, there were no precedents upon which the victims could base their case. In cases where there were laws, there were also a number of significant limitations and loopholes. Even regulations established in 1958 regarding industrial effluents were inapplicable because effluents from acetaldehyde compound and allied chemical production facilities, such as those which caused the Minamata disease, were exempted. Therefore, the only course of action was through the application of the civil code through the related courts, in which the contention made by the plaintiffs could only be based on the illegality of certain deliberate actions or certain kinds of unpremeditated liabilities. However, the untreated effluent discharge from the chemical complex was to be understood in relation to long-standing public domain common consent precedents, which would make it so difficult to assign liability to the company for discharging the said wastes that the lawyers for the plaintiffs thought their cause was lost from the beginning.

At this time a voluntary general citizens' group was formed to support the victims of the disease, called the People's Congress for the Minamata Disease, and Kumamoto City's Association to Indict the Minamata Disease joined forces with it for the purpose of instituting a Minamata Disease Research Group to support the court struggle. Within the context of this orga-

nization, citizen volunteers, researchers, journalists, Chisso Company labour union members, and various other people came together in order to continue research on the historical course of the disease. When the company tried to destroy records in regard to past forms of manipulation, some of these materials were saved and taken from the company by labour union people. Dr Hosokawa, retired from the company and on his deathbed, testified to the fact that the results of his animal experiments were kept secret by the company. The Minamata Research Group was able to piece together the puzzle from the facts that were already known and new materials that had been brought in, and through this effort was able to compile a report which clarified the Chisso Company's liability in, and responsibility for, the Minamata disease. The Association to Indict the Minamata Disease began a small newspaper to report in detail the court procedures and the activities of the various disease victims; this paper was delivered nationwide. The legal procedures were very slow and extremely difficult. There was not the same degree of activity as with the Niigata court proceedings, but news of the legal battle spread from Kumamoto to other interested and concerned persons scattered across the country. From 1968 to 1970, several books were written to introduce the facts and problems surrounding the Minamata disease. The highly acclaimed *Kukai jodo*, by poetess Michiko Ishimure from Minamata City, portrayed in rich and powerful language the beauty of Minamata and the misery of the disease. The book's literary merit made it widely read, a fact which further helped to sustain knowledge of and interest in this social disaster. Ms Ishimure received the coveted Magsaysay Award from the Philippines for her masterly work.

The negotiating team appointed by the Ministry of Public Welfare proposed in 1970 that the Chisso Company pay small amounts in compensation without being held responsible for the disaster. This proposal was criticized by many, but the majority of the victims, who were dependent on company fortunes, accepted the proposal and signed in resignation. In this way the "trust" victims' group made a compromise and the "lawsuit" group experienced some loss of direction regarding future action. Around that time the basis for certain important actions was being developed. It all started with one person's inquiry as to the real meaning of the Minamata disease.

X. In Search of the Minamata Disease

In general, Minamata disease was characterized by symptoms typical of methyl mercury poisoning, and it was described and recognized in patients who developed these same severe symptoms between 1953 and 1960. The Kumamoto University Medical Department, which became the centre for examining patients, was, as such, under constant criticism from many parties that had a vested interest in opposing the university's organic mercury cause-and-effect theory. In order to protect themselves from excessive criticism of this sort, the medical department tended to designate patients as disease vic-

tims only if the patients exhibited the most classic symptoms of the disease, such as narrowing of the visual field, lack of motor co-ordination, and damage to the sensory nerves. In the case of the second Minamata disease in Niigata, careful epidemiological surveys were made of the disease and it was discovered that the disease symptoms varied to a great extent, depending on the severity of the poisoning. In spite of the fact that they knew full well that they were victims of the disease, many patients did not apply for recognition as official Minamata disease victims because of local community pressure or because of economic interactions and dependence on the fisheries industry. Furthermore, there were many people in the various communities around Minamata who were aware that their friends and neighbours unknowingly had the same symptoms as the recognized disease patients, but were not examined by the committee of doctors set up to designate disease victims. This committee was set up to decide who should receive sympathy money from the Chisso Company, and as a result was under pressure to make very careful screenings so as to limit the number of recipients. There was a rule maintained by the committee that any death from the disease should not be designated a disease-related death. Therefore the medical evaluations were cursory, with a resulting reduction in the number of patients that Chisso had to compensate. This helped to keep the company economically viable, for the entire Minamata community was dependent on it.

Teruo Kawamoto, a fisherman who lived in an area where there were many Minamata disease patients, decided to take not only his own case, but also that of his father who died in 1966, to the examination committee for designation as Minamata disease victims. He presented these cases to various medical institutions, and also to the Human Rights Protection Committee, but was always treated as one who was merely seeking an easy source of income. Not only was his own case rejected, but that of his father was determined non-admissible on the grounds that there was no way that a person already dead could be examined for a particular disease. On the basis of these experiences, he visited other people who complained of the same symptoms, and presented their cases also for designation as patients, but all these applications were rejected. He then learned that there were other avenues of appeal, and, with the support of the Minamata Disease Research Group, made a request to the Ministry of Public Welfare (later to become the Environment Agency) that the cancellation by the Kumamoto Prefecture committee of his application for designation as a disease patient be reversed. Kumamoto Prefecture responded to this initiative by indicating that medical diagnostic decisions, other than those provided through the prefectural committee, could not be accepted as a basis for patient designation. The Minamata Disease Research Group countered with detailed samples and analyses which proved beyond a shadow of reasonable doubt that the results of any thorough medical examination in the Kawamoto cases would provide a wholly adequate base for designation as Minamata disease victims. However, the symptoms of non-Minamata disease pathological processes were often used to mask the symptoms of pathologies caused by methyl mercury poisoning.

For example, high blood pressure and diabetes were frequently designated as causes of patients' symptoms when in fact the cause was mercury poisoning.

However, in 1971, on the basis of evidence supplied by the Minamata Disease Research Group, the Environment Agency decided that patients should be designated victims of the Minamata Disease if the symptoms of organic mercury poisoning were present to any discernible degree. This governmental agency introduced changes in the patient examination ground rules and made official attitudes fairer, as contrasted to earlier procedures which had been unduly influenced by political pressures that had been brought to bear. An unavoidable change in the circumstances affecting the fated symbiotic relationship between the Chisso Company and the Minamata community then came about because the number of Minamata disease patients increased. All this was the result of the work of only 100 persons, but the news of the official change in the social and medical ground rules quickly spread across the nation. The most obvious factor was the management crisis that the Chisso Company would face if there were a great increase in the number of designated Minamata disease patients. Furthermore, the news of the Niigata disease victims' victory in the civil court increased the fear of economic instability among the citizens of Minamata City who were dependent on the Chisso Company. Re-examination of patients began, and victims who had once been rejected were able to get themselves designated as disease patients. But the Chisso Company still refused to enter into direct negotiations with the patients' organization, and continued to insist on the third-party method of interaction. The citizens of Minamata feared an increase in the number of designated patients, concerned that increased reparations would further compromise the economic viability of the company, thereby jeopardizing their own prospects for a viable economic future. These citizens brought pressure to bear on patients who were demanding adequate compensation. The majority of the people living in Minamata City were in favour of maintaining the viability of the company and thereby the general welfare of the city. Furthermore, many of the citizens feared that they might also be disease victims, and this fear provoked persecution of the minority Minamata disease patients' organization. This new patients' movement, which was basically in favour of direct negotiations with Chisso Company directors, found its own development greatly impeded by opposition from public opinion as well as by obstructionism from the company and city administration. Under this kind of pressure, some of the patients changed their minds and decided to co-operate with the third-party negotiations. As a result the disease victims were divided again into the previous "trust" and "lawsuit" factions.

XI. Sitdown Strike at Chisso Company Headquarters— Seeking Direct Negotiations

Kawamoto and a few of the other Minamata disease victims, having no further access to negotiations with the company in Minamata, decided to go to

Tokyo where the general offices of the company were located, in order to negotiate with the company President, the one person most responsible for Chisso policies. There they were joined by a contingent of supporters from Tokyo and its environs. Since the company President would not make himself available for talks, the demonstrators started a sitdown strike inside the corporate offices, determined to stay there until the President agreed to a direct confrontation. At this point, the police were called in, and the strikers were forcibly removed. They remained on the street in front of corporate headquarters for 18 months, beginning in December 1971. Also, Kawamoto went to other Chisso Company manufacturing plants to seek the cooperation and understanding of Chisso workers and their labour unions. When he visited the company-loyal labour union at the Goi plant in Chiba Prefecture, he was met with violence. One of the causes of the early death of the famous American photographer, Eugene Smith, was an injury received as a result of accompanying Kawamoto to the Goi plant. This kind of violence against the Minamata disease victims' movement was bitterly criticized in every quarter, and these events strengthened citizen support for the sitdown strike at company headquarters. The social symbiosis between the company and the citizens that existed in Minamata City was not operative in Tokyo. Between 1968 and 1969, when campus-based student demonstrations were at their peak, young people became very much aware of social issues and problems, and these same students came voluntarily to the aid of the Minamata sitdown strikers. When for so-called security reasons the city called in the riot police to break up the strike, supporters were united in non-violent demonstrations. This event was to become the longest and the largest sitdown strike in the history of Japanese social movements. These demonstrations also had a profound effect on Chisso management.

The United Nations Conference on the Human Environment, held in Stockholm in June 1972, unofficially welcomed the participation of the Minamata disease victims, and through this the world came to know not only of the seriousness of the pollution problems in Japan, but also of corporate and state attitudes toward environmental destruction. The first official Japanese government report to the Stockholm conference, on the state of Japan's environment, made no mention of Minamata disease. People in Japan, in reading the official report, were angered by this lack of honesty on the part of their government, and in response produced a citizens' report which described not only Minamata disease but also the many other pollution diseases and problems that Japan was suffering from. This same citizens' group decided also to send both Minamata disease victims and Kanemi PCB poisoning victims to the United Nations conference. Faced with this reality, the government of Japan hurriedly produced a special supplementary report on the Minamata disease and other pollution-related problems, so as to maintain a semblance of integrity at this international gathering.

The Minamata disease victims who attended the various non-governmental organization (NGO) meetings in Stockholm reported to the world on the misery of the many pollution victims in Japan, and pleaded for a world in

which such misery would no longer be allowed. At that time Japan was seen from outside as being a model of perfection in its rapid economic development and modernization programmes encouraged by the government's high-economic-growth policies; but the Minamata disease and other serious pollution-related diseases and problems showed the other side of the high-economic-growth coin, and the revelation of such great pain and suffering in Japan made the world, and especially the developing nations, much more aware of the extreme social costs inherent in excessively rapid economic development and industrialization. Within this context also, the Minamata disease victims became aware of the well-developed social welfare programmes in Sweden, and were amazed at the difference between these and the almost non-existent programmes in Japan.

The sitdown strike of the Minamata disease victims in front of Chisso corporate headquarters became known worldwide. As far as the Chisso Company and the Metropolitan Police were concerned, the strikers were nothing more than troublemakers, and administrative officials were anxious for a chance to remove them from their encampment. Many attempts were made to throw them off the premises but such efforts were unsuccessful. For example, there would be daily encounters between the strikers and company employees aimed at stirring up the kind of trouble that would result in the arrest of Kawamoto and his supporters. In October 1972 the Chisso Company attempted to remove the tents of the strikers and at the same time demanded withdrawal of the legal suit against the company. Kawamoto refused to yield to this pressure, so the company brought a counter-indictment charging Kawamoto with injury. Later this charge was thrown out of court as injurious to the Minamata disease victims. This was the first time in Japan's legal history that such a suit was to be rejected by a court as out of order. At the same time the effect of this counter-suit against Kawamoto was a change in the negotiating stance taken by the many Minamata disease victims in Minamata City who were dealing with the company through the pollution negotiation committee established by the government. Some of the direct negotiation group began to question the motives of the government's negotiating committee and in the process decided to investigate the veracity of the seals on the proxies presented to the committee from some of the patients. This led to the discovery that some of the proxies had been forged. This kind of injustice was not rare in pollution-issue struggles, but this was the first time that such a practice had been discovered and verified. With proof of this kind of perfidy, the government's negotiation committee lost its credibility and thereby its authority, and because of this it was unable to complete any negotiations before the civil court handed down its verdict. In March 1972, the Minamata civil court case ended with a verdict in favour of the plaintiffs, the Minamata disease victims. The patients who won the lawsuit then went to Tokyo in order to negotiate compensation details with the Chisso Company, and joined in the struggle there with the direct negotiation group. In July 1973, through the direct mediation of the director of the Environment Agency, the Chisso Company promised to pay to all designated Minamata disease pa-

tients more in compensation than was guaranteed by the court decision. With this series of events the sitdown strike, which had gone on for more than a year and a half, was brought to an end.

XII. The Third Minamata Disease and Administrative-level Perfidy

The Medical Department of Kumamoto University, which in 1971 had begun making surveys in relation to a second outbreak of Minamata disease, instituted research on a broader epidemiological basis designed to provide predictions about the situation ten years into the future. Symptoms among patients in heavily polluted and more lightly polluted areas were recorded and compared. In order to compare these two levels of pollution, the research team also made a survey of the Ariakecho area. Here also, in spite of its distant location from the original pollution sources, people were discovered who had disease symptoms very much like those of the Minamata disease patients. Furthermore, there was no denying the possibility that there also could be mercury pollution in other areas. In May 1973, the mass media reported this fact, calling it the "third Minamata disease." With news related to PCB and mercury poisoning springing up all over Japan, the report of a "third Minamata disease" brought panic to the fishing industry. Between 1972 and 1973, just before the "oil shock" struck, Japan was at the peak of its high-economic-growth period and there was also extraordinary activity in the money markets; all these factors created a great deal of national anxiety. Also, because of the excessive overloading of petrochemical complex production capacities, there had been a continuing series of fires and explosions. Groups of local fishermen began to react by cementing up the sea-polluting effluent discharge pipes from various manufacturing plants, and the entire nation was subject to a great deal of social apprehension. The government of Japan could no longer ignore the great increase in environmental destruction. With the co-operation of selected medical professionals, the government began to make surveys of the general health of the people living in the most polluted areas, in order to deal with the fear and consternation that had been created by an ever-expanding circle of discoveries revolving around Minamata disease. The results of the survey indicated that 158 Minamata disease patients had been discovered in a sample of 50,000 persons. However, 114 of the 158 had already been designated Minamata disease patients, and later surveys indicated that even greater numbers than reported in the survey had also been designated as victims. Therefore, it came to be understood that this medical survey had been carried out only to manipulate public opinion. The survey doctors were told that the disease patients who came to be examined were only there in order to obtain reparations. The third Minamata disease patients were examined in this light and were recognized as victims only when they displayed typical and classic symptoms of mercury poisoning.

Thus, through these procedures, a group of so-called medical professionals concluded that there were no third Minamata disease patients.

Within this context, organic mercury poisoning, as seen in the case of the Minamata disease, was understood not in terms of its effects on the whole body, but rather in terms of localized pathologies relative to specific target organs. Within the context of these new and yet unencountered medical situations, the medical profession was unable to make investigations on the basis of the realities at hand, but simply applied generalizations based on theoretical orientations derived from the work of others. This of course is a serious problem that constantly haunts the development of scientific methodology related to environmental destruction, as research is always limited to quantifiable phenomena. As a result, no meaningful surveys were carried out in relation to the problem of mercury poisoning.

The Minamata Disease Patient Examination Committee, which was instituted by Kumamoto Prefecture, was dissolved when the terms of the individual members came to an end (1974–1975), and this brought to an almost complete halt any attempts at designating Minamata disease victims. The results of this were no measurable increases in the number of designated patients. From 1975 onward, the work of the prefecture in designating disease victims declined, and even those persons that were considered either were treated as marginal cases or had their applications rejected. At this very time, encouraged by the successes of Kawamoto's movement, the number of persons who were applying for recognition and designation as Minamata disease patients was on the increase, and by 1975 there were more than 3,000 people seeking this kind of help.

In many instances, journalists for sensationalist newspapers would write articles about so-called fake Minamata disease victims. A good example of this was to be seen in 1975 when the chairman of the Kumamoto Prefecture Special Committee on Environmental Pollution made some remarks about non-genuine Minamata disease victims while visiting the Environment Agency. Because of his position as a public servant, his words carried a lot of weight and had a resounding effect on the mass media. In response to this irresponsible sensationalism, the Minamata disease victims staged a public direct action protest which resulted in the arrest and prosecution of many of them. This same kind of irresponsible agitation through the mass media was repeated both in central and local government-related politics, with many believing that there was a continuing effort to manipulate public opinion against the disease victims.

The effluent discharge from the Chisso Company's Minamata complex was halted only after the operation of the complex ceased owing to worsening profit margins. Under the depressed economic conditions of the time, a plan, funded through public investment, was proposed to remove several hundred tons of mercury-contaminated sludge from the bay. With the Minamata facility suffering from economic hard times, and the payments to disease victims ever on the increase, people welcomed this large-scale reclamation project as

a way of refloating the local economy. But some of the Minamata disease patients were very apprehensive about the plan, for stirring up the sea bottom could easily cause an increase in the human suffering caused by mercury poisoning. With this opposition in mind, Kumamoto Prefecture, in cooperation with the university, formed a committee to determine the safety of the reclamation project. In fact, the purpose of the committee was to legitimize the project. An opposition group consisting of Minamata disease victims and local citizens sought a legal injunction against the plan, but the battle was lost in court and the reclamation of the mercury-contaminated area is now in progress.

The Chisso Company management, which was suffering under the burden of the large payments that had to be made to designated disease victims, was also experiencing further difficulties because of the depressed condition of the chemical industry sector of the economy. As a result, it gradually came to a point where it could no longer make payments to disease victims, and asked for help from public funding sources, asking the government to pay reparations to patients on a temporary basis. The government decided to loan money to the Chisso Company on condition that the prefectural government, backed up by the national loan office, issue bonds for the purpose and that the funds be raised from bank purchases of the bonds. This system of using publicly guaranteed funds to shore up private enterprise was much criticized, but for the next three years on an experimental basis, and then after that on a permanent basis, this system was operated.

In the summer of 1978, a Vice-Minister of the Environment Agency issued new guidelines for Minamata disease patient designation standards according to which disease designation would only be allowed in medically established high-probability cases and deaths would not be admissible for designation unless an examination found hard evidence as to the probable cause of death and the body was made available for research purposes. The disease victims recognized these moves as a governmental attempt to limit the number of disease patients when the number of applicants for examination was on the increase. In reality, after this change in the ground rules, the number of applicants whose cases were rejected greatly increased.

In 1973, when Takeo Miki, the Director of the Environment Agency, visited Minamata, he promised to make a complete survey of the epidemic area as a high-priority state project, and as a result the National Minamata Disease Research Centre was built in Minamata City. However, in the process of planning the project, Dr Takeo Tamiya, who was a leading figure in one of the former non-functioning Minamata disease committees set up by the government, was once again made head of the survey project, and, as in the case of the former committee, the voices of the Minamata disease victims were not heard. As a result of these factors, the disease patients refused to cooperate with the work of the new centre. Although the centre housed the best and most modern medical equipment and facilities available anywhere, it was unable to function at all. As is very clear from this and many other examples, lacking the participation, recognition, and co-operation of disease

victims, governmental action in regard to the Minamata disease has been and remains inept.

XIII. Minamata Disease Victims' Movements and Efforts at Renewal

Up until the time of the first civil court decision in 1973, the movement involving the disease victims and their supporters was mainly oriented toward a protest against the Chisso Company, with the company trying to negotiate by means of a third-party system established through governmental intervention. As a result of these reverberating interactions and interrelationships, the disease victims' movement was divided, in response to company and administrative obstructionism, into smaller factions employing differing tactics that were broadly characterized by direct negotiation and court settlements. After the end of Japan's high-economic-growth period in 1974, systematic pollution policies created by various governmental organs produced more problems for the disease victims than the company ever did. This government-induced oppression of victims' movements, such as was seen in the attempted indictment of Kawamoto mentioned earlier, and in many other lawsuits and legal manoeuvres, had the effect of heightening public debate but did not bring about a meaningful resolution of outstanding problems and contentions. The most salient problem for the victims' movement was the system established for designating official disease patients, for, given the legal circumstances of the times, lawyers came to take a leading role in determining which of the disease victims should give up their legal struggle for patient designation, and which should go on to a second- or even third-level court. In some of these court battles, the judicial system was able to achieve, at least for some of the victims, legal designation as verified Minamata disease patients, but for all the effort involved in this process, the results have been minuscule in every respect. The indictment brought against the company by the victims in 1960 found the company to be in error, but the court struggle continues to this day without any clear end in sight. Although, from the beginning, a great deal of the fault in relation to the continuation of the Minamata problem rests with government administrative error and ineptitude, as represented by the continued obstruction of justice and limiting of due process, there exists no effective means of designation and punishing governmental duplicity. The administrative organs of government were asked by the Minamata disease patients to provide thorough examinations and observations of disease victims in order to compile a complete epidemiological picture of the disease, but the fact remains that such work, even on the most fundamental level, has yet to begin. Within the context of the present political climate, there is very little hope of change in the Minamata situation. There are no records of the exact number of disease victims, nor is there any likelihood that primary policy orientations will change in

such a manner as to respond more adequately to the plight of the many victims that probably exist.

However, even in these difficult circumstances, the disease victims have continued with their rehabilitation under their own auspices. Kawamoto once said: "Because there was no Minamata disease patients' movement, and because the said patients are weak, the truth about the Minamata disease is still unknown." Although the victims and the various supporters view the problem from varying perspectives, the words of Kawamoto are recognized by all as portraying the truth of the situation. It goes without saying that there have been efforts at disease-victim rehabilitation, but these have been sporadic and limited.

The results of the United Nations Conference on the Human Environment have already been mentioned, but this conference provided the first instance of physically handicapped disease victims being sent abroad through the support of a coalition of supporting citizens' groups.

In 1975, as soon as it became known that the same kind of disease was being discovered among certain Canadian Indians, the Minamata disease victims invited the Indians to Minamata and Niigata. In 1976, some of the disease victims from Japan participated as delegates in the Habitat Conference in Vancouver, and visited Indian reservations in Ontario and Quebec. In 1982, delegates from Japan went to the Environment Conference in Nairobi, Kenya, and spoke on problems and developments during the ten-year period since the last environment conference in Stockholm. At that time warnings were sounded in relation to the spread of environmental diseases in certain other Asian countries.

The Minamata Research Group, which was formed at the time of the first civil court struggle, was able to provide reports and survey results of high academic quality. They provided Kumamoto University with well-documented Minamata disease sources, and this work still continues. In this regard, the contribution of Seirinsha must be remembered.

Seirinsha was the creation of Noriaki Tsuchimoto, who led Japan in the production of documentary films on the Minamata disease and the supporters' movements. These films were shown in many places and this contributed greatly to spreading knowledge of the disease. His works have also been recognized internationally. In 1978, over a six-month period, the Seirinsha group took their movies to 133 locations in 65 villages within a radius of 30 km of Minamata City, in and around the Shiranui Sea area. In 1975, Tsuchimoto produced a three-part series on the Minamata disease from a medical perspective, the results being a compilation of the many differing aspects of the disease. The narrative was written in collaboration with the Minamata Disease Research Group using all available material, including that of Dr Hosokawa and a number of other co-operating medical practitioners. In 1979, the medical textbook *The Minamata Disease—20 Years of Research and the Problem Today* was compiled through parallel efforts. The book, which meets the highest international standards, was produced by the movie-makers and the people, not by government-sponsored academics.

Dr Masazumi Harada and the group of medical doctors who participated in the Minamata Disease Research Group tried to understand the total picture through research centring on the patients themselves. It is a well-known fact that Minamata disease patients exhibit symptoms characterized by high blood pressure, diabetic-type responses, and liver ailments, all of which are complicated by Hunter–Russel-type responses. These factors have been identified from pathological investigations that have traced the distribution of mercury poisons in various organs of the human body.²

Long-term observations in real-life situations have shown that the absorption of even small amounts of mercury over an extended period result in undeniable dangers to human health. However, the combination of clinical symptoms characteristic of the Minamata disease is similar to that seen in the pathological processes of ageing, and as a result it is difficult to differentiate the Minamata disease from geriatric problems in cases where the degree of mercury poisoning is limited. Various treatments aimed at ameliorating the sustained degenerative effects of the Minamata disease have been tried. Certain rehabilitation exercises may be of some use in regaining lost motor functions, but there is no hope of recovery from the pathological processes brought on by mercury poisoning.

1976 saw the formation of an academic research group incorporating both the natural and social sciences; subsequently a report, *Shiranui-kai sogo chosadan* (General Research on the Shiranui Sea), was published.³ Several young people who were involved in disease-victim support movements now live in Minamata and continue their various activities. One of their projects is the building of the Soshisha (Mutual Concern) Centre with contributions sent from all over Japan. The centre functions to provide work for patients whose handicaps are not severe, as well as offering training activities for young people; to this end it gives one-year internships to young people from urban situations. This project is similar to programmes in India in which urban youths participate in rural community camps.

Akira Sunada, a professional actor, lives in Minamata with the patients, earning his livelihood from organic farming. At the same time he has continued his mission, and through the presentation of his unique but traditional plays has told the story of Minamata and the disease patients to a large and varied audience. Through these activities people are reminded that this problem is still very much with us, and that there is a need for continued financial and moral support. A network that provides sales outlets for the organic agricultural products has been established with the help of various consumer organizations. Treatment of patients with oriental medicine has been tried, and many other projects have been launched. All activities are sustained on a voluntary basis and are not supported by any established funding organizations—a fact that gives the community a certain feeling of autonomy.

In front of the Minamata City railway station there is a clinic to serve the needs of the Minamata disease patients. This clinic was set up by the Japan Association of Democratic Medical Organizations to provide a broad range

of medical services to disease victims. It has a great deal of meaning for this community which once revolved around the lordship of an industrial complex, and great strength is derived from the knowledge that adequate care is available at the hands of professionals. Attempts to renew the local community have just begun, but the problems of the Minamata disease are far from over.

XIV. Conclusion

Minamata disease came into being as a result of one chemical complex that was, at a certain point in time, positioned at the heart of a new and rapidly growing industry. Because of the company's pride in its own technological prowess, it was blinded to the dangers of the waste effluents that it allowed to enter the human environment. The industry and various governmental organizations understood pollution problems only in terms of economic viability, and these same sectors of society tried to evade and cover up these problems through an initially successful series of oppressive measures. However, the problem reared its ugly head again, and this time the company was forced into a situation in which it could no longer continue operations. The way in which these problems were dealt with is beyond the comprehension of the present age. When industry and government circles were faced with this crisis, instead of attempting to deal in a straightforward manner with the realities involved, they simply initiated a cover-up in order to maintain traditional social structures and relationships for the sake of profit. Because of this obstructionism and perfidy, the destruction of the environment was worsened to a such a degree that all attempts at a solution have failed. Within the context of this crisis, the Minamata disease victims themselves, their supporters, and citizens' movements have worked to arouse public opinion, and to encourage the struggle of all disease victims. The majority of victims endured their suffering in silence in the hope that someday people would forget their existence. Through the application of universal democratic social action, a small minority of disease victims, refusing to be beaten, brought about a new start for the many victims of the disease. Where there are no people's movements, no progress is made toward meaningful solutions and the complexities are finally forgotten. Through active citizens' movements, new methods are discovered and new ways opened up. Most Minamata-disease-related citizens' movements employed non-violent direct action. In this way, the disease victims, even though they were socially weak, did not lose the battle, but were able to turn their deeply shared mutual experiences into powerful weapons for the fight. When such movements aim at returning basic human rights to the people, and when the appeal is directed at the full humanity of all persons, success is assured and progress can be made on a firm basis of human support.

One issue that has not yet been fully dealt with is that of the potential contribution of the disease victims to a full assessment of the damage done to

the human environment by methyl mercury poisoning. The magnitude of the problem is such that, on the basis of present knowledge, it cannot be left to experts in the environmental sciences alone. It is obvious that Japanese political circles, and the related administrative organs of government, are totally incapable of coming to terms with the multitude of problems centring around this massive pandemic. Thus the adequacy of the work ahead depends upon how positively the socially weak disease victims are allowed, and able, to participate in the much needed overview of the problem, and in the process of finding solutions. These experiences are ones that we should all learn from, as we look ahead to other potential environmental disasters brought about by human greed.

Notes

1. According to the Environmental Agency of the Japanese government, the number of Minamata disease victims as of December 1990 is 2,239, including 987 deaths. There are 2,903 people who are seeking official recognition as disease patients (White Paper on the Environment, 1991).
2. Hirotsugu Shiraki, *suigin osen no jitai* [The Reality of Mercury Poisoning], *Kogai kenkyuu*, vol. 2, no. 3 (1973): 1.
3. Daikichi Irokawa, ed., "Minamata no keiji" [Minamata Revelation], *Shiranui-kai sogo chosa hokoku*, vols. I and II (Chikuma Shobo, Tokyo, 1983).

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