<Preparatory Study for Minamata Field Work>

The following shows the agenda to be learned before taking part in Minamata Field Work. Would-be participants are recommended to pick up some or all from the list to suit their time available or learning methods.

For those who wish to prepare in as short as one or two-time course, a recommended plan is presented.

- All the visual items shown here can be used without restriction.
- The literature cited for reference should be used in compliance with the copy-right regulations.

I Agenda for basic learning

%Click the title for details

1. Minamata and the Outbreak of Minamata Disease

(01) Where is Minamata (Location and environment)

(02) Livelihood in Minamata (Fertile sea, abundant crops, etc.)

- (03) Foundation of Chisso Corp(then Japan Nitrogen Fertilizer Corp. founded early in 20th century. Why in Minamata?)
- (04) Chisso expanded into North Korea during WW II.
- (05) Production of acetaldehyde started in Minamata right after the war ended. (Minamata became the castle town of Chisso as it developed so big as to predominate the town)

(06) In 1954 cats went mad and died in the villages by the sea. (What was happening?)

(07) In 1956 the first cases of Minamata Disease were officially reported. (Who discovered it where?)

2. Minamata Disease Sufferers and their Communities

%Click the title for details

(08) Conditions of the sufferers \rightarrow footage of acute sufferers

(09) Reactions of the people around the sufferers (discrimination and prejudice)

(10) How Chisso treated sufferers (the solatium contract and the fishermen's wrath)

(11) Cause detection (the research by Medical Faculty of Kumamoto University)

(12) Discovery of the congenital form of Minamata Disease

(13) Termination of acetaldehyde production and opening of Chisso Chiba Factory

3. Minamata Today Reference: Map, Outline History of Minamata Disease"

%Click items for details

(14) Official Certification and Lawsuits

(15) Issues around the certification

(16) Chisso Corporation in the aftermath and today (Global petrochemical product manufacturer)

(17) Minamata Bay in the aftermath (containment by the net and reclamation)

(18) Toward ecology-minded town (named Eco-town and restoration of the communal unity)

(19) On-going Minamata Disease

(20) How to convey "Mianamata"

I Recommended plan of the short course

Solution or curricula, we recommend the following short course:

%It is most recommended to provide students with opportunities to think using the literal and visual material cited as reference.

1.One lesson of approx. 50 min.

%Click items for details

(01) Where is Minamata (location and environment)

(08) Conditions of the sufferers \rightarrow footage of acute sufferers

(11) Cause detection (the research by Medical Faculty of Kumamoto University)

(12) Discovery of the congenital form of Minamata Disease

(17) Minamata Bay in the aftermath and today (containment by the net and reclamation)

2.Two lessons of approx. 50 min. each (50min.×2)

%Click items for details

Lesson 1

(01) Where is Minamata (Location and environment)

(02) Livelihood in Minamata (Fertile sea, abundant crops, etc.)

(06) In 1954 cats went mad and died in the villages by the sea. (What was happening?)

(07) In 1956 the first cases of Minamata Disease were officially reported. (Who discovered them where?)

(08) Conditions of the sufferers \rightarrow footage of acute sufferers

Lesson 2

(09) Reactions of the people around the sufferers (discrimination and prejudice)

(11) Cause detection (the research by Medical Faculty of Kumamoto University)

(12) Discovery of the congenital form of Minamata Disease

(17) Minamata Bay in the aftermath and today (containment by the net and reclamation)

(18) Toward ecology-minded town (named Eco-town and restoration of the communal unity)

1. Minamata and the Outbreak of Minamata Disease

(01) What kind of environment is Minamata embraced with?

- Locate Minamata on the map. It is in the southernmost of Kumamoto Prefecture facing the Shiranui Sea and neighboring in the south Izumi of Kagoshima Prefecture. It has a population of 27,598 as of 2010. What is the Shiranui Sea like? Calm inland sea surrounded by Amakusa Archipelago.
 - \rightarrow Imagine how people here lived.

Map : Kumamoto Prefecture



Photos : Left : The Shiranui Sea at Tanoura Right : Sunset over the Shiranui Sea



(02) How did people in Minamata and Ashikita live about 60 years ago?

 The calm Shiranui Sea provided abundant fish and other seafood. The fishermen in Minamata and Ashikita, the neighboring district, lived on fishing baby sardines, cutlass fish, shrimps, octopuses, etc. They trawl-fished on a sail boat called Utase, which is operated even now in Ashikita. The dining table was full of various kinds of fresh seafood. Especially those living near the sea ate much more seafood than we eat today. Those living in the hilly areas produced various farm products. Most lived self sufficient lives on what they harvested.



Photo : The traditional Utase trawling (Experimental boarding is offered.)

Photo : Terrace paddy fields in Kukino Village, Minamata City The water comes from Samukawa Headwaters.



(03) A factory of Chisso Corporation (then Nippon Chisso Hiryo K.K) was established.

 The factory was built in the center of Minamata in 1908 invited by Minamata Village to make use of the surplus electricity generated by the Sogi Hydroelectric Plant on the Sendai River, that goes through Isa City, Kagoshima Prefecture. This marked the beginning of Chisso Corporation today. Mr. Shitagau Noguchi, the founder, started production of nitrogen fertilizer using carbide. He founded many other factories in Kyushu early in 20th century.

Photo : The remains of Sogi Hydroelectric Plant in Isa City, Kagoshima Prefecture



(04) Expansion into Korea during WW II

• Nippon Chisso Hiryo K.K. expanded into Korea in 1927 and developed a huge chemical industry complex including the world largest fertilizer factory in Hungnam, North Korea today. It was the time when demand for nitrogen fertilizer steeped. Why did they expand into Korea?

Photo : Hungnam Factory in North Korea : source "Business Overview of Nippon Chisso Fertilizer"



(05) After the war, full operation for acetaldehyde production started in Minamata

 Chisso lost all their assets abroad as Japan was defeated in 1945, however, they rapidly revived through production of fertilizer and vinyl for agriculture to become domineering industry and Minamata also grew owing to the factory like a town developed around a feudal castle. Their workers were called "factory goers" in respect and envy or "factory beggars" in despise. Minamata's population grew to 50,461 in 1956, the ever largest, when the production amount of the acetaldehyde hit the highest. They started the production of acetaldehyde in 1932 and rapidly increased their production in mid 1950s as the rapid economic growth of the nation induced the chemical industry to grow. In consequence they discharged wastewater containing methyl mercury into Minamata Bay.

Photo : Minamata Factory of Chisso of the day



(06) Cats in the villages by the sea started to go mad and die in 1954

 Kumamoto Nichinichi, a local newspaper, reported in 1954 that almost all the cats in Modo Village got mad and died. The report came out as villagers had asked the local authority to take measures against the rapid increase of the rats and mice in the absence of cats. We now know that it was an omen of Minamata Disease but nobody could tell then. It was also reported that strange things were happening to fish and birds around the sea near Minamata.

Article in a newspaper : Kumamoto Nichinichi Newspaper in 1954



All the cats have died of epilepsy, Modo Village, Minamata

Screaming at the rampant rats nd mice!

Mr. Ishimoto of Modo Fishermen's 27, Association aged pleaded Public Health Dept. of Minamata City to kill the rapidly increasing rats and He says that in Modo, a village of 120 households, cats started to go mad and die in early June and all of the 100 some cats have died. Consequently rats and mice are having their days damaging the fishermen's village. The cats brought from other villages have also died. There are no paddy fields so pesticide cannot have killed the cats. The villages are just perplexed and frightened with this weird incident. Public Health Dept. is to take some measures against the rats and mice.

(07) The first cases were reported in 1956 (Where and by whom?)

 On the 1st May 1956 the discovery of an unknown disease was reported to the Public Health Center of Minamata by Dr. Hosokawa, Director, and Dr. Noda of Chisso's Hospital. This is so-called the official discovery of Minamata Disease. The sufferers were two sisters aged two and five. Their researches discovered by the end of the same year 54 sufferers, 17 of whom had already died. Later they found that the disease had been seen as early as three years before. Why was it discovered in the Chisso's hospital? How people reacted to the discovery of this unknown disease?

Photo: Tsubodan (Tsubotani) A calm inlet with almost no change from the days (Oct. 2010)



2. Minamata Disease sufferers and their communities

(08) Conditions of the sufferers through visual material, conditions of acute sufferers

• The sufferers were isolated as the disease was suspected to be contagious. The suspicion was cleared very soon as there had no actual transmittance of the disease while sufferers got worse and some died. Those showing hard convulsions were acute sufferers. Methyl mercury damaged the cerebral nerves causing damage in senses and physical movement.

Source : "Illustrated Minamata Disease; A pictorial record of material exhibited at Minamata Disease Museum" edited by Soshisha of Foundation Minamata Disease Center Gradational Relation between the Amount of Methyl Mercury and Symptoms



Latent, inapparent intoxication

The symptoms of the methyl mercury poisoning that appeared in some workers of an agrochemical manufacturing factory in the UK are known as Hunter Russel Syndrome. It includes physical ataxia (difficulty in writing, walking, etc.), sensory impairment (numbness at the limbs), disorders in hearing and articulation, afferent narrowed vision field, and trembles. This precedent eventually led researchers to the causal substance of Minamata Disease. However, some medical doctors were misled to believe that those lacking in any of the symptoms could not be Minamata Disease cases. Minamata Disease's symptoms vary widely and acute, incomplete and mild cases exceed typical cases. The health and physical strength in general of the residents along the seaside was proved much poorer than that of people in other areas, which indicates expansion of the disease.

(09) Attitude of the people around the sufferers (discrimination and prejudice)

 Although it was confirmed that the disease was not communicable, discrimination and prejudice against the sufferers grew worse. Neighbors would not talk to the sufferers any longer, stones were hurled at sufferers, sellers at shops would not take money direct from sufferers but had it placed on a tray saying "Put your money here. I don't want to get your disease", etc. Few dared to openly blame Chisso as it was de-facto the lord of Minamata. As fish came to be suspected to cause the disease, people refrained from eating fish. Fishermen tried to conceal sufferers in their village in fear that their fish would not sell due to bad reputation. Thus the fishermen and their families fell poorer and poorer.

Source : "Illustrated Minamata Disease, a pictorial record of material exhibited at Minamata Disease Museum" edited by Soshisha of Foundation Minamata Disease Center



The below shows the abuse hurled at sufferers

When first discovered, the sufferers were called names and abhorred as sufferers of a bizarre or infectious disease. Sufferers were abhorred by even their own siblings or relatives. The compensation money awarded after their lengthy painful fights brought them more pains with slanders and envies. Some were accused as fake sufferers. Seeing the reports about acute sufferers in the mass media, people believed all the real sufferers had such terrible symptoms as convulsion, and died. So they believed those with mild symptoms were fake.

(10) Chisso's response to the sufferers (the solatium contract and the fishermen's wrath)

• The fishermen started to move against Chisso in spring in 1959. The factory did not accept their accusation. It was later disclosed that Chisso had known their wastewater had been the cause through their experiments on cats but had concealed it. On 30th December 1959 the authority of Kumamoto Prefecture presented a recommendation mediatory to the negotiations between Chisso and the sufferers. It is so called Solatium Agreement including some clauses disadvantageous to the sufferers. The fishermen refused it as the solatium was too small. However, some could not help but accept the offer just to survive through their plights. What is the problem of the agreement?

Source : Solatium Agreement (30 Dec. 1959) from "Illustrated Minamata Disease", a pictorial record of material exhibited at Minamata Disease Museum edited by Soshisha of Foundation Minamata Disease Center

Deceitful Solatium - 1959 -



Chisso, knowing that their waste had caused Minamata Disease, offered disgracefully low amount of money not as compensation for their wrongdoing but as a token of sympathy to the destitute. They even made the sufferers promise not to claim for further compensation even when Chisso's fault was officially proved.

With all the industries, the chemical sector, the central government, mass media, and labourers supporting Chisso and so isolated, sufferers had no choice but accept this humiliating agreement obediently.

Later this agreement was declared invalid by the court for the reason that it was against the public order and standards of decency.

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(11) Identifying the cause (Researches by Medical Faculty of Kumamoto University)

• As early as in 1956, the year following the discovery of the disease, it was known that fish from Minamata bay had something to do with the disease through the experiments on cats by Minamata Public Health Center. However, the finding was not taken into consideration. At the same time, Medical Faculty of Kumamoto University continued their experiments to identify the causing substance but could not tell which substance in the wastewater actually caused the disease. When they found that the symptoms of the methyl mercury steam poisoning that had happened at an agro-chemical factory in UK in 1940 were the same as those of Minamata Disease, they made significant advancement. The research group announced in 1959 their theory that the disease was caused by organic mercury. They contended that methyl mercury in the sea had entered the sufferers' brain through fish and affected their nerves system. However, the government would not believe it and the wastewater was not stopped. To make the matter worse, other theories were raised by professors in Tokyo further delaying the causal detection.



Photo : The cat shed for experiments owned by Minamata Disease Museum of Soshisha

(12) Discovery of the congenital form of Minamata Disease

- There was an announcement in 1961 that overturned the long believed theory that the placenta would block poison to protect the fetus. It was about the born sufferers of Minamata Disease who were exposed to methyl mercury in their mothers' wombs. Dr. Masazumi Harada, former professor at Kumamoto Gakuen University and others identified the congenital sufferers of Minamata Disease. They were born with various handicaps and some are still fighting against the disease now.
 - * DVDs and CDs for lending are available at Municipal Minamata Disease Museum.
 - Click to visit its website for borrowing CDs or DVDs. http://www.minamata195651.jp/list.html#4

(13) Termination of producing acetaldehyde and foundation of the Chiba factory

• Chisso continued their operation even after they had known that their wastewater included the causing substance of Minamata Disease. They made up safety of their wastewater by relocating the outlet or by installing cyclator purifying system. However, the pollution was not least reduced and production of acetaldehyde was increased. In the meantime, petrochemical industry was coming into the center of industry. Chisso built a petrochemical complex in Chihara City, Chiba Prefecture and finally terminated their acetaldehyde production in 1968, when Chisso was moving their center from Minamata to Kanto.

Source: "Illustrated Minamata Disease", a pictorial record of material exhibited at Minamata Disease Museum edited by Soshisha of Foundation Minamata Disease Center



How methyl mercury forms

Chisso's Minamata Factory used mercuric sulfate as catalyst in the process of manufacturing acetaldehyde. In this process some of the mercuric sulfate turned into methyl mercury. The toxicity of the mercury as metal is known. The mercury in the form of methyl mercury is far more toxic as it can easily be combined with protein. It is said that the world market share of Chisso's plasticizer DOP made from acetaldehyde was around 85%, making it so vitally important for the Japanese economic growth.

3. Minamata Today

(14) Official admission of the pollution and law suits

The government finally admitted in 1968 that Minamata Disease had been caused by industrial pollution. It was 12 years after the official discovery of the disease. It was around the time when so called the four largest pollution related diseases namely Minamata Disease, Yokkaichi Asthma, Itai-itai Disease or cadmium poisoning and Niigata Minamata Disease were rampant. In 1969 112 sufferers filed a lawsuit against Chisso. Kumamoto District Court handed down the verdict in 1973 admitting almost all the sufferers' claim. It was followed by the second suit, the third suit, Kansai suit, and more.

Source: "Illustrated Minamata Disease" A pictorial record of material exhibited at Minamata Disease edited by Soshisha of Foundation Minamata Disease Center

Verdict on Minamata Disease Trial -1973 -

We must say that any chemical factories that discharge their industrial effluent out of their factories are obliged to pay highest attention to investigate with the highest available knowledge and technology into the existence of any harmful substance in the effluent and its harmful influence on the human body and living creatures to ensure safety of the effluent. In case it is proved or suspected harmful, they should immediately take best possible measures including suspension of the manufacturing operation to prevent hazards, especially any probable threats to the lives and health of the residents in concern. No factories should ever be allowed to risk the lives and health of the local residents.

Even if the effluent of the defendant factory met the legal restrictions or administrative guidelines and even if their treatment method excelled that of other factories of the same kind, their deed of discharging the acetaldehyde effluent is obviously to blame. The defendant cannot be free from the charge of the error in that discharging the effluent was conducted as a part of the defendant's business itself.

It is clear that the defendant's basic attitude of valuing profits more highly than human lives is the real cause of the Minamata Disease.



(15) Official Recognition of the disease

How many people all together have been stricken with Minamata Disease? This is a very basic question. However, it has never been surveyed. Therefore, we can only estimate the number based on the number of people who have been certified or those who have been claiming to be sufferers. There are many who have refused to be recognized as a sufferer. Typical symptoms of the disease are numbness in the limbs, narrowing of the vision, difficulty in speaking, etc. The government requires more than one typical symptom for the official recognition so not all who claim can be recognized. Many of the acute sufferers are already dead. There are many whose conditions get worse as they get older, while not a few have just recently come to be aware of their disease.

Source: "Illustrated Minamata Disease", a pictorial record of material exhibited at Minamata Disease edited by Soshisha of Foundation Minamata Disease Center



Process of Certification and Compensation

Victims can receive compensation only after they have been certified by the administration as a victim in accordance with the Law Concerning Pollution-related Health Damage Compensation and Other Measures. Any resident within the designated area having symptoms of Minamata Disease can submit to the governor his/her application form attached with the medical certificate. Then the applicant goes through examinations by the prefectural administration, the report of which goes to the Certification Council composed of medical doctors. The governor makes decision in accordance with the committee's advice. The actual implementation of this process is highly problematic both in terms of legal compliance and for victims' real situations.

(16) Chisso in the aftermath (to a global chemical manufacturer)

 Ever since its conversion into petrochemical industry, Chisso has developed various kinds of products besides fertilizers. Today it boasts around 50% share of the world liquid crystal and related material. In addition, it has developed a wide range of new material commonly used in our daily life including hyaluronic acid. It was divided into two bodies in 2011, Chisso the manufacturer and JNC, which executes compensation for the victims of Minamata Disease.

Profile of Chisso Corporation as of December 2010

■Offices

Tokyo Head Office, Osaka Office, Kumamoto Office, Europe Representative Office

Factories

 Goi Factory (Chisso Petrochemical Corporation) located at a corner of Keiyo Kombinat (Petrochemical Complex) facing Tokyo Bay is the production base of synthetic resin including polypropylene and polyethylene having the site of 51ha.

• Yokkaichi Factory (Chisso Petrochemical Corporation and Japan Polypropylene Corporation)

• Moriyama Factory (Chisso Polypro Fiber Co., Ltd.) located along the eastern coast of Lake Biwa is the base for producing bicomponent fiber from polypropylene and polyethylene manufactured by Goi Factory .

• Tobata Factory (Kyushu Chemical Industry Co., Ltd.) is in the center of Northern Kyushu Industrial District and produces fine chemical and electronics materials, fertilizers, etc. of high functionality including LC material, orientational material for LC, overcoat material to smooth the surface of color filter panels, agents to adjust the effect of fertilizers, plant nurturing soil, etc.

• Minamata Head Office/ Minamata Factory is the origin of the Chisso Corporation with the site of 50ha and produces various LC and electronics material of highest technology as a core factory.

(17) Minamata Bay in the aftermath (containment net and reclamation)

• The containment net was set up in 1974 at the mouth of Minamata bay to contain the sea creatures contaminated by methyl mercury. It was 2350m long and the sea creatures inside the net were caught and packed in drums. The sludge containing methyl mercury accumulated in the bay as thick as 4m at the most. Kumamoto Prefecture reclaimed land from a part of the bay in order to bury the sludge and the sea creatures packed in drums. The construction lasted for 13 years from 1977 and the land is now 40ha amenities called Eco-park with athletic fields, a rose garden, etc. However, the sludge with a high amount of methyl mercury remains underground and so does the fear for leak of the sludge as the walls are naturally due to deteriorate.

Aerial Photo : Minamata Bay in 1974 and that after reclamation in 2009



(18) Toward a model town for environmental conservation

Minamata Disease was named after the place where it had occurred, which has been causing much trouble to the residents of Minamata with discrimination and prejudice. Most hesitate to reveal they are from or live in Minamata. Minamata, with aims to change its negative reputation to positive one, has been striving to become a model for environmental protection. An example is sorting out their kitchen refuse into 23 categories to make reuse of discarded material as much as possible. On the days designated for releasing refuse, you may see junior-high students engaged in sorting refuse at their communal garbage stations. Another is the establishment in 2001 of an industrial complex called Eco-town accommodating factories engaged in reuse or recycle businesses. The city has also been consciously trying to restore their communal ties. The above mentioned Eco-park is a part of their efforts and Moyainaoshi Center is established for exchanges between Minamata Disease sufferers and Minamata citizens.



Photo : School kids in action for sorting the kitchen refuse

Photo : Students from abroad touring in a factory in Minamata Eco-town



(19) Relief measures yet incomplete

• It was widely believed that the relief plans for the Minamata Disease victims were complete when they accepted the reconciliation plan submitted by the government in 1996. However, some who had been dissatisfied with this plan filed a lawsuit in Kansai, the verdict of which rejected the claim of the national and the prefectural governments.

This verdict made the government criteria for certification in dispute again. The national government adopted in 2010 a special act on relief of and compensation for Minamata Disease and now claims based on this act are being registered. There is no clear answer yet to the questions what is the righteous solution for Minamata Disease or how it should be solved.



Issues left behind

(20) How to convey lessons learned from Minamata Disease

• So far you have learned through brief look-back of Minamata Disease that there have been various incidents and people with different interests and standpoints. Have you understood what kind of problems Minamata Disease has and what remains unsolved? The sufferers live not only in Minamata but also all over Japan.

You are to visit Minamata. So we would like you to think over the numerous people who have been making efforts in various ways to convey the lessons from Minamata Disease. Think of the oral historians for example. What are they thinking or how are they feeling as they talk about their experiences?

What should you learn from Minamata Disease? How should you make use of what you have learned? It is you yourself who can give answers to these questions.

Source: "Illustrated Minamata Disease" A pictorial record of material exhibited at Minamata Disease edited by Soshisha of Foundation Minamata Disease Center

How many victims of Minamata Disease in the world?



Areas suffering mercury pollution (source: reference data of National Institute for Minamata Disease)