

**Evaluating Nuclear Energy from  
the view points of Social Costs,  
Social Capital, and Social Justice:  
Observing impacts to the  
communities in the Navajo  
Nation and Fukushima, Japan**

June 27, 2016

ISEE Conference, Washington, DC

Yoshihiko Wada, PhD

Doshisha University

Kyoto, Japan

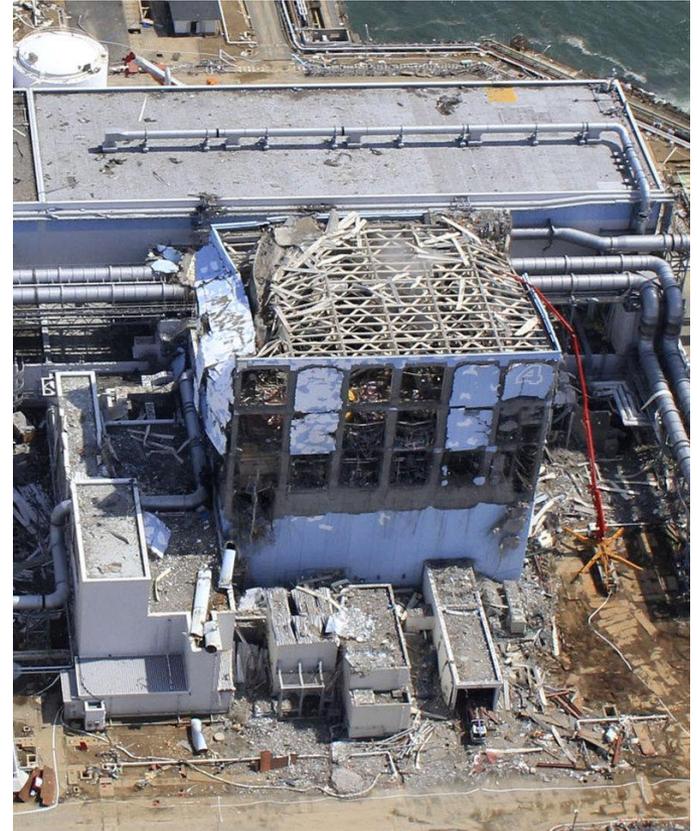
# Problem Statement

- **Nuclear energy** is often held up as a realistic and cost effective way of addressing **energy shortage** and **global warming** simultaneously.
- However, this technology exhibits profound defects which threaten **ecologically and socially sustainable future**.
- For example, nuclear energy is accompanied by **increased “Social Costs”** and **destruction of “Social Capital.”**

# Purposes

- In this paper, first, I would like to explore what has happened and what is happening in Fukushima and Navajo Nation due to radioactive contamination of the land and water.
- Secondly, I would like to examine “rationale” as to why nuclear energy use has been justified and accepted throughout the world, and how?
- I learned a lot from historical analysis of pollution cases in the past.

# Fukushima Dai-ichi Nuclear Reactors Tokyo Electric Power Corporation (TEPCO)



**Left:** [http://blog.livedoor.jp/nuclear\\_power\\_plant/archives/3442518.html](http://blog.livedoor.jp/nuclear_power_plant/archives/3442518.html) accessed on January 15, 2015.

<http://www.asyura2.com/11/genpatu8/msg/430.html> accessed on January 15, 2015.

Japan is in **deep trouble**. Due to Fukushima Dai-ichi Nuclear accident in March 2011, **dreadful phenomena** are being observed in Japan.

1) There are enormous **Social Costs** having been imposed on the land and water and the residents. These costs are real and biophysical and medical nightmare.

2) The other example is **Loss/degradation of Social Capital**, i.e.,

**A) Loss of Citizens' Trust in the state, governments and the nuclear conglomerate**

**B) Amplified Discord and Division within Community, Society and even within Family.**

# 1) Social Costs

**A) Relocation:** 160,000 residents of Fukushima Prefecture had to be relocated from their homes (as of May 2012). Still, the number is estimated to be 110,000 or so as of late 2015.

**B) Loss of Fertile Farmland:** Fukushima is famous for hosting high-conscience innovative farmers. They have established system of ideal farming practices for many years . But, they had to abandon their land-base. Some farmers committed suicide due to the complete loss of hope.



**Late Shigekiyo Kanno, a daily farmer**

<http://blog.svp2.com/?eid=938839> last accessed on June 20, 2016



東京新聞 <http://www.tokyo-np.co.jp/article/feature/nucerror/list/CK2013053102100005.html>  
last accessed on June 20, 2016

**“If not for the Nuclear Power Plant !!”**

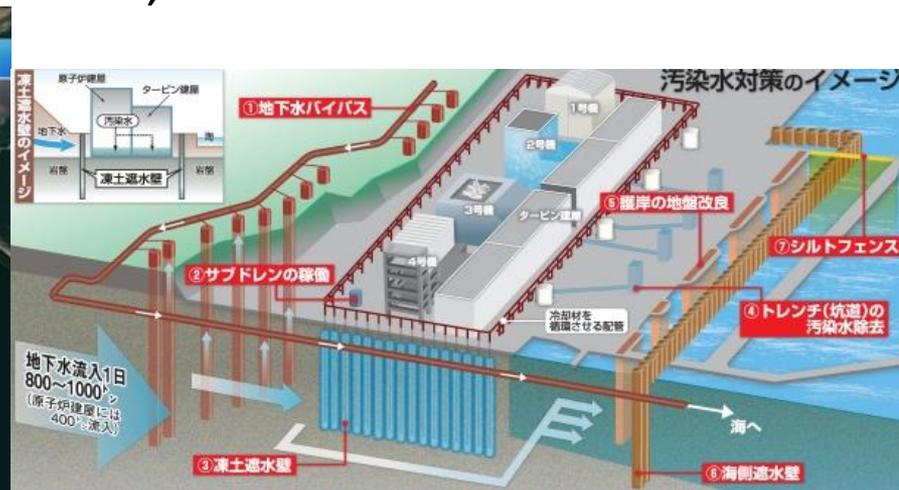


## C) Biocapacity Loss

- **2.7%** of the Japanese terrestrial “Biocapacity” was lost due to contamination.
- **1.8 million ha = 4.4 million acre) > 1.57 million ha of rice paddy field** in Japan.
- (WWF, GFN, 2013. Ecological Footprint of Japan 2012, special thanks to David Moore and Katsu Iha).



**D) TEPCO estimates 1,000 tonnes of Underground Water seeps into the reactor buildings daily. 300 tonnes of water becomes highly radioactive and being treated by filtering facilities. Some of the polluted water seeps into the Pacific Ocean. TEPCO has built a freezing soil wall around the reactor buildings in April 2016. But, they do not know whether the wall has been effective. Prime Minister Abe lied during the IOC meeting in 2013 by saying that he assured the world that the situation is under control. However, that was not true.**





**E) Piles of contaminated soil remain in temporary storage sites. Government's Proposals of building intermediate storage sites have been rejected by many local autonomies.**



*Days Japan. Vol.12, No. 11.  
November 2015.*



*Days Japan. Vol.12, No. 11. November 2015.*

**F) Thyroid Cancer:** Fukushima Prefectural Government announced in February 2016, that **166 youths** have been diagnosed as having thyroid cancer or as having high possibility of contracting this disease. In the last five years, some 300,000 youths living in Fukushima have been examined.

This is somewhat between **60-75 times higher** rate than the rate observed in 2010.

The Japanese government, however, has never admitted the causal relationship between the nuclear accident and the high rate occurrence of the disease. But, there is no rational explanation for their claim.



*Days Japan. Vol.12, No. 7. July 2015.*

## 2) Loss/Degradation of Social Capital

### A) Loss of Citizens' Trust in the state, governments and the nuclear conglomerate (including TEPCO)

- “Distrust” among citizens is largely aroused by the government/TEPCO’s **Unwillingness to Disclose True Information**. For example, as of 1997, TEPCO and the government recognized the risk of “Tsunami” and they started research on this issue. However, once the severe accident took place, they say this was **“Beyond their Expectation.”**

- Another major cause of “Distrust” is the government policy to **force the evacuated residents of Fukushima to come home, if the exposure level is expected to be less than 20 milli-Sievert (Sv) per annum.**
- However, the Japanese legal system prohibits the general public from living in areas where radioactivity exposure is expected to be more than **one milli Sievert (Sv) per annum.**
- So, the new policy is against the “equality under the law.”
- Nevertheless, the Japanese government officials started telling the local governments to refrain from providing housing anymore to these whose hometown is supposed to be “safe” according to their criteria .

## **B) Amplified Discord and Division within Community, Society and even within Family.**

- There are two types of citizens. One type is the ones who trust what the government says. The other is those who do not. The community is divided into two, and **the tension and distrust between the two have become so intense. Pro-government group called the other group “Hikokumin” (Traitor), the term often used during the 2<sup>nd</sup> World War, for those who were against the war.**
- The same problem occurs within household. There are some cases of “divorce” because of the differences of opinion, as to where to raise children...

# Discussion Part 1

- Looking back the history of nuclear energy use, **the same kind of problems have existed from the beginning, more or less. The Fukushima Disaster has just revealed and illuminated the existence of the same problems.**
- **Nuclear energy technology, even without major accident,** imposes all kinds of social and environmental impacts. Exposure to radiation throughout the life cycle of fuels is one of them. Nuclear fuel cycle starts from **uranium mining, refining, enrichment, operation and maintenance of the power plants, and disposal of radioactive waste, etc..**

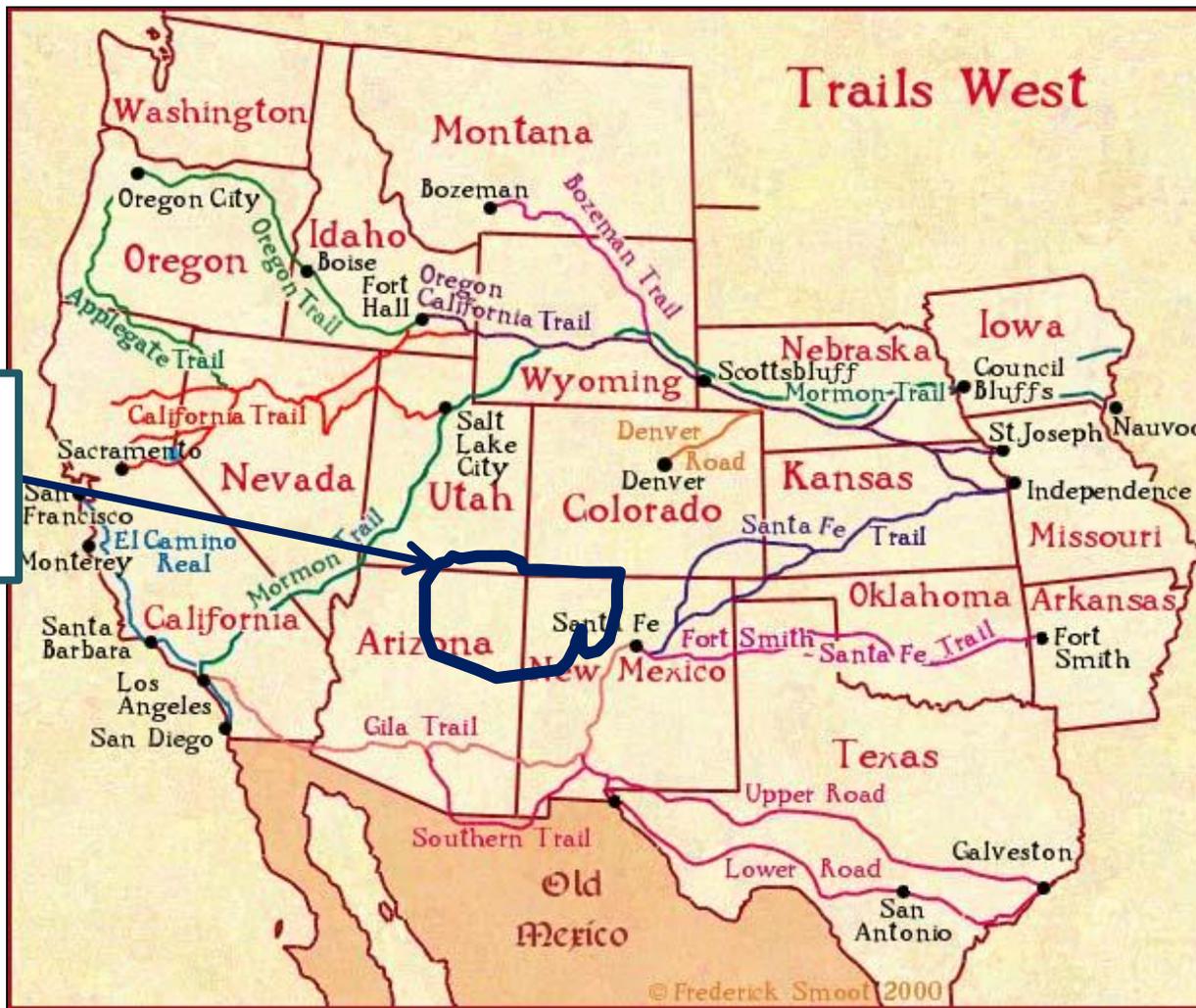
# Nuclear Energy relies on and Presupposes “Sacrifice”

- In fact, Nuclear energy use has **relied on and presupposed the existence of “victimized” and “sacrificed” people.**
- For example, the operation of nuclear reactors requires **huge amount of exposure to radiation, especially during regular maintenance period** (Higuchi, 1995, Nuclear Ginza).
- Robots cannot replace humans because it requires delicate and subtle handling.
- Sub- or sub-sub contractor workers are the ones who are often engaged in this risky work. Employees of large companies, such as TEPCO and Hitachi, stay in the safe zones. This energy requires **discrimination of workers.**

# **“Sacrifice” of Navajo Nation through uranium mining activities**

- **Let us take a look at the impacted people in Navajo Nation within USA.**

# Western Part of the USA アメリカ合衆国西部

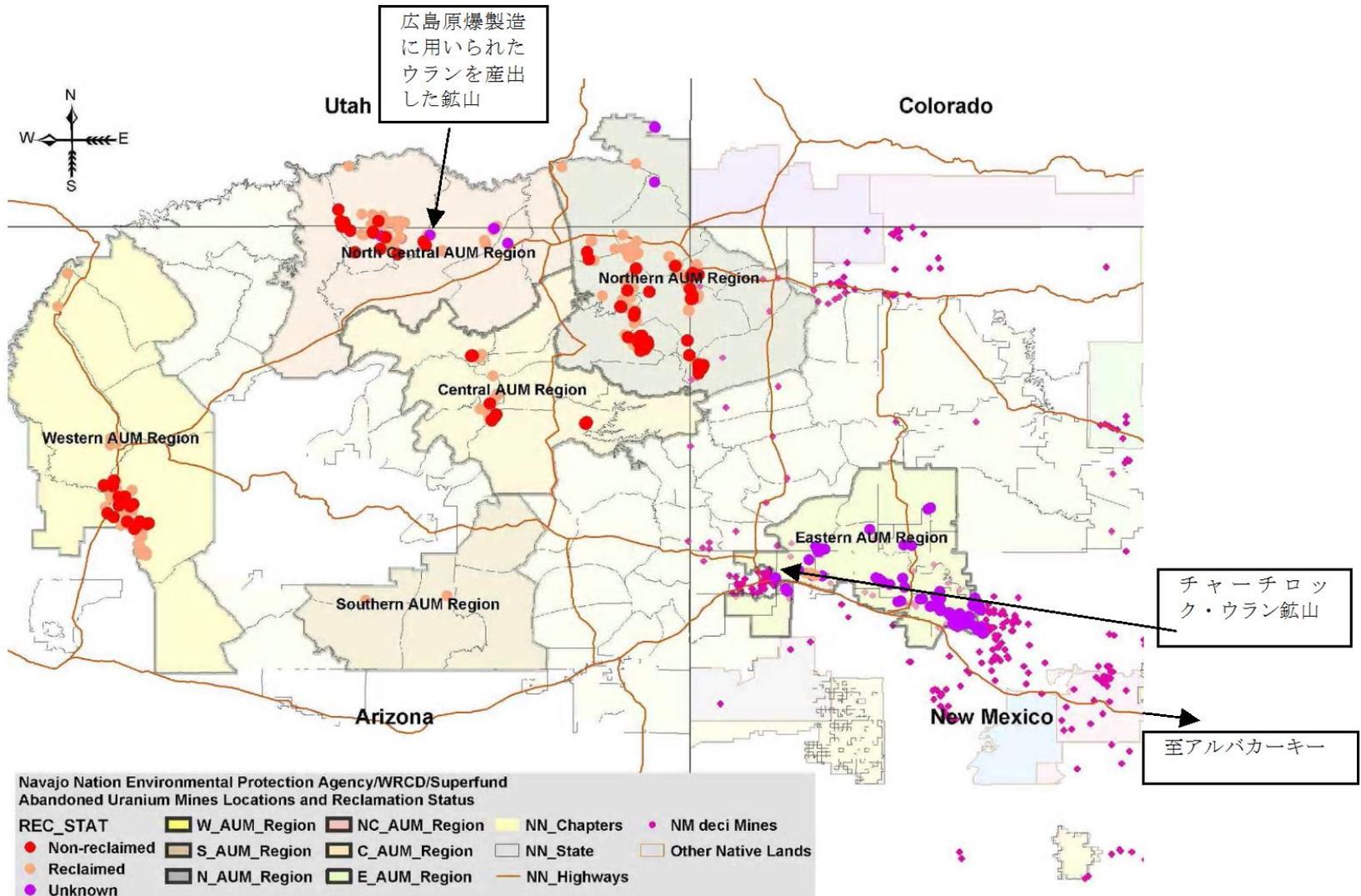


Navajo  
Nation  
Reservation

出典: [http://www.google.co.jp/imglanding?imgurl=http://www.tngenweb.org/tnletters/west-usa.jpg&imgrefurl=http://www.tngenweb.org/tnletters/usa-west.htm&h=522&w=618&sz=101&tbnid=m\\_8scOt4Cx5W6M:&tbnh=115&tbnw=136&prev=/images%3Fq%3Dusa%2Bwest%2Bmap&hl=ja&usq=\\_\\_r-Ewhp2XBohLt3WuLwsN5r89kwU%3D&ei=SFPPrSm9KdPakAW00NmbDw&sa=X&oi=image\\_result&resnum=3&ct=image&ved=0CA0Q9QEwAg&q=usa+west+map&start=0#start=3&imgurl=http://web.wm.edu/amst/370/2005F/sp1/image\\_awesome\\_map.jpg](http://www.google.co.jp/imglanding?imgurl=http://www.tngenweb.org/tnletters/west-usa.jpg&imgrefurl=http://www.tngenweb.org/tnletters/usa-west.htm&h=522&w=618&sz=101&tbnid=m_8scOt4Cx5W6M:&tbnh=115&tbnw=136&prev=/images%3Fq%3Dusa%2Bwest%2Bmap&hl=ja&usq=__r-Ewhp2XBohLt3WuLwsN5r89kwU%3D&ei=SFPPrSm9KdPakAW00NmbDw&sa=X&oi=image_result&resnum=3&ct=image&ved=0CA0Q9QEwAg&q=usa+west+map&start=0#start=3&imgurl=http://web.wm.edu/amst/370/2005F/sp1/image_awesome_map.jpg)

# Navajo Reservation

(1200-1300 abandoned uranium mine sites)



Source: Shuey 2008.

# A Navajo Community near the Church Rock Uranium Mine Pit #1 (Two Households such as Mr. Teddy Nez)



## Health Damage of the Navajo Nations due to uranium mining activities

- The rate of occurrence of Congenital Abnormality in the surrounding area of Ship Rock Uranium Mine during 1964-1981 was **2 - 8 times higher than US average.**
- The number of Navajo uranium mine workers who died due to the mining activities is estimated to be **500~600 until 1990. The similar number of workers have been estimated to have died in the next decade.** (Brugge and Goble 2002).

# Underground Water Contamination Still Continues to be Serious in Navajo Nation

- US Center for Disease Control and Prevention (CDC) conducted a research in **2008** in Navajo Nation.
- They discovered that water from **22 wells out of 100 wells** existing near the abandoned mine sites were contaminated with **radioactive substances in excess of safety standard**. Among them, **21 wells have been utilized** by residents nearby.

(2008 Deseret News Publishing Co)

- **Serious radioactive contamination problem has existed as of 1943 when the development started.**
- **However, this has been neglected for 60 years. It was not until 2009 that decontamination work was launched by the US Environment Protection Agency (EPA).**
- **This neglect may be attributed to “Environmental Racism.” (Furitsu 2011.)**
- **Out of 1200-1300 abandoned uranium mine sites, 500 sites need to be decontaminated (Etsitty 2007).**

# Church Rock Uranium Mine site: Decontamination operation near Pit No.1

チャーチロックウラン鉱山  
縦坑No.1付近の放射性物質除去作業現場



United Nuclear Corporation, UNC  
Started mining activities in 1968.  
Closed in 1985.



# Discussion Part 2

**Next, I would like to explore “rationale” behind this. Why has this deadly technology been justified and accepted throughout the world, and how?**

**Looking back to the history of modernization and pollution in Japan can give us some hints.**

- **Kurihara (2000) a prominent sociologist, observed what has happened to Minamata Disease victims. He coined a term, “Productive Power Nationalism” i.e., national policy and ideology that the productive power of a nation must be given the highest priority, even though some sacrifice is accompanied.**
- **This is a similar concept as “economism” (Cobb 1997). (Kurihara put more emphasis to productive capacity.)**
- **Kurihara sees that the productive power has brought about an “affluent” society full of consumer durables. At the same time it has brought about the destruction of human body and dignity, the environment as well as community in Japan since Meiji Restoration in 19<sup>th</sup> Century.**

- **The logic to justify nuclear power was Cost-Benefit Doctrine (Nakagawa 2011). Nakagawa looked at the history of behavior of nuclear conglomerate since the end of World War II. He especially examined how the International Commission on Radiological Protection (ICRP) has contributed to the dissemination of this Cost-Benefit Doctrine. The doctrine tells us that even though there are victims, if the benefit is far greater than the costs to the victims, pains and suffering, then the development project should go ahead.**
- **ALARA principle=as low as reasonably achievable**  
(Justification of radiation exposures to some extent)
- **Then, he observed a tendency of ICRP and nuclear conglomerate to over-estimate the benefits and underestimate the costs of radiation exposure.**

# Conclusions

- Critical examination of international and national policy of utilizing nuclear energy as well as history of pollution cases has revealed that the system which promotes nuclear industry heavily depended on the ideology of **Production Power Nationalism** as well as **Cost-Benefit Doctrine**.
- Without abandoning these powerful ideologies, we will **not be able to prevent the occurrence of “victims” and “sacrifice.”**
- I also realized that **reconstruction of social capital** requires abandonment of these **unethical ideologies**.

- **The current civilization of humanity is based on the ideology that presupposes the occurrence of “victimized” and “sacrificed” people.**
- **This way of thought is *the root cause* of problems which modern civilization faces.**
- **We must now remember the famous quote of Shozo Tanaka, an ecologist and leader of non-violent citizens movement against Ashio Copper Mine Pollution Case who died 103 years ago.**

***“If the state harms and kills its people, it will destroy the nation itself.”***

***“A true civilization will not damage mountains and rivers, will not destroy communities and will not kill people.”***



**Kenneth Strong. 1995.  
*Ox Against the Storm: A Biography of Tanaka Shozo - Japan's Conservationist Pioneer.* Routledge.**

**We must come up with a  
completely new civilization which  
does not kill people.**

**THANK YOU!**

**If you have any question, please do not  
hesitate to contact me:**

**[yowada@mail.doshisha.ac.jp](mailto:yowada@mail.doshisha.ac.jp)**

**Faculty of Economics**

**Doshisha University, Kyoto, Japan**

# Production of “acetaldehyde” at Chisso Minamata Factory and Showa Denko:

## One proof that Japanese government is obsessed with “Production Power Nationalism”

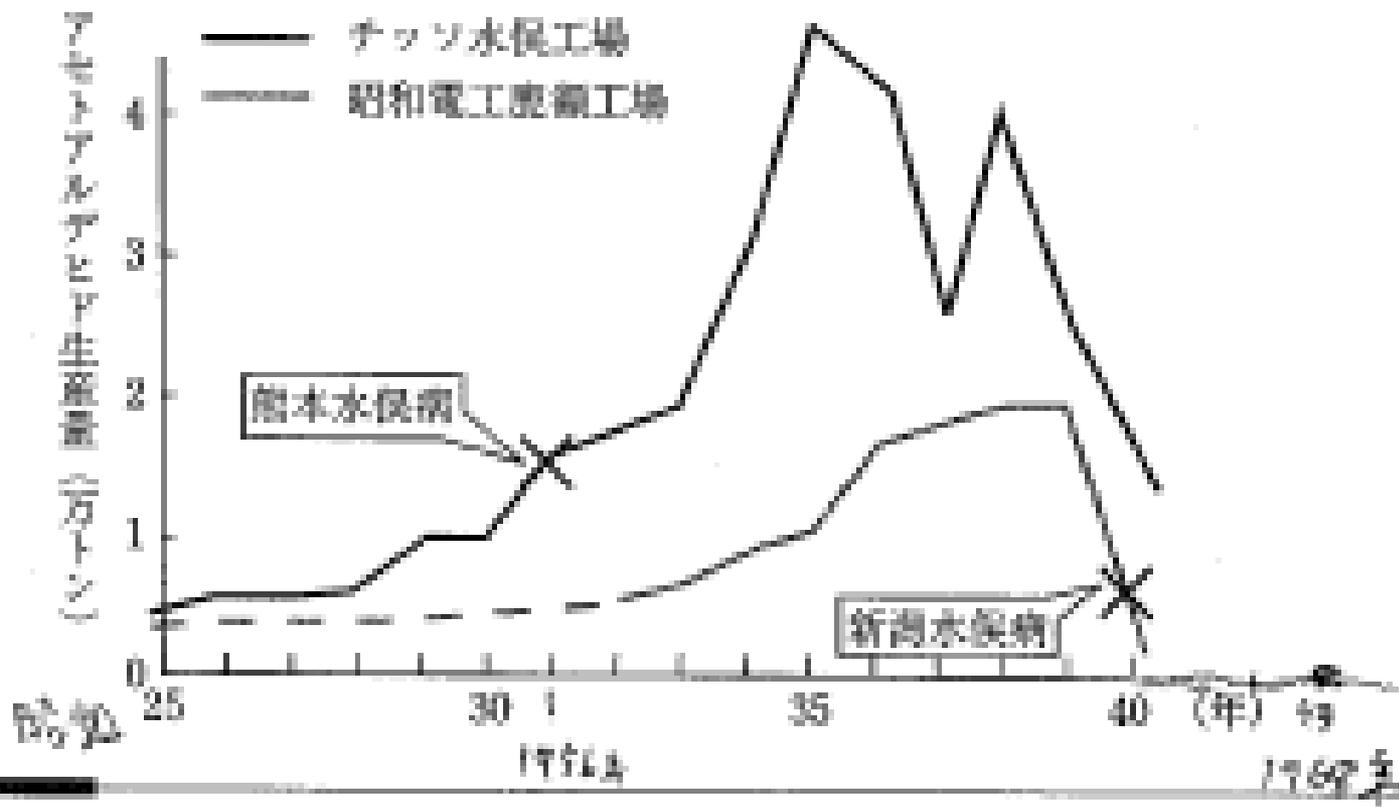


図11-5 アセトアルデヒド生産量推移