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Environmental Education for Urban Clean Air for Sustainable City

Environmental Education to Improve Air Quality for Community Renewal

YARIYAMA, Yoriko (Aozora Foundation)

0. Introduction

Thank you for giving me this opportunity of presentation here. I'm a staff working for the Environmental nonprofit organization called "Aozora Foundation". Aozora means a blue sky. The formal name is "the center for the redevelopment of pollution-damaged areas". Aozora Foundation was established in 1996 using a part of the settlement in Nishiyodogawa air pollution lawsuit. I have been working there since the same year and now, I am in charge of the library and accounts.

In my presentation, at first I will explain about air pollution problems in Nishiyodogawa area. The second, I will introduce our environmental education to improve air quality.

1. Nishiyodogawa: From Air Pollution to Community Renewal

(1) Characterization of the Locality

The area where we are most active is Nishiyodogawa Ward in Osaka City. The ward is on the city's west end, in the Hanshin Industrial Zone, which is one of Japan's four major industrial zones. This region is characterized by large factories mostly in the heavy industries along the Osaka Bay coast, while inland there are small and medium-sized companies in the machine industry and other industries. One more feature is that the region is crisscrossed with major highways. Traffic includes many large trucks, and the intersection of route 43 has daily average traffic volumes as high as about 85,000 vehicles.

(2) Pollution during the Rapid Economic Growth Period

Japan's rapid economic growth period, which began in the second half of the 1950s, brought severe pollution and environmental damage throughout the nation as the down side of sudden economic development. The Nishiyodogawa area was no exception. Air pollution arising from the combination of factory smoke and motor vehicle exhaust had a devastating impact on human health and the community. There were many cases of asthma, emphysema, chronic bronchitis, and other ailments, and many people died from asthma attacks. People who contracted illnesses at that time must even now continue to receive treatment.

As these pollution problems arose, victims around the nation conducted anti-pollution citizens' movements to eliminate pollution and to protect their rights. In 1973 their efforts led to a law meant to provide relief for pollution victims. This law, the first of its kind in the world, is called the Pollution-Related Health Damage Compensation Law. It alleviated the financial burden on pollution patients for their medical treatment and livelihood. About 7,000 pollution patients were certified under the law in Nishiyodogawa Ward. But from the victims' point of view, this was still not

enough because they wanted to determine who was causing this pollution and have them take responsibility for the damage.

(3) Nishiyodogawa Pollution Lawsuit

So it was that in 1978 pollution victims in Nishiyodogawa Ward filed a lawsuit against 10 large corporations including a power producer and a steel mill, and against the national government and the Hanshin Expressway Public Corporation. It is called “Nisiyodogawa air pollution lawsuit”.

It was a large lawsuit with 726 plaintiffs. Pollution victims felt strongly that they did not want their children and grandchildren to suffer as they had. The lawsuit asked that the defendants compensate victims for damage and to keep their air pollutant emissions under environmental standards. Victims started using the slogan “we want to leave a blue sky to our children” to show what they wanted to accomplish. Many citizens sympathized with this, and the movement expanded quickly.

This lawsuit was completely resolved in 1998. It took 21 years owing to the great difficulty of proving that factory smoke and motor vehicle emissions damage human health, and also to prove the shared responsibility of the defendant companies. But this persevering struggle won the recognition that the corporations and government are responsible for air pollution.

Here, I would like to show the video about anti-pollution movement in Nishiyodogawa area.

The lady on the video, Ms. Tsukaguchi is 87 years old. She is even now going to the hospital every day. This video teaches us that it is important residents take action and appeal to public and we can change our society by ourselves.

(4) From Legal Settlement to Community Renewal

When the plaintiffs and nine defendant corporations reached the reconciliation in 1995, the plaintiffs donated 1.5 billion yen to renewal community. It came from the settlement which amount 3.9 billion yen. They wished for a future with a blue sky. To pass that wish on to the next generation, they set up Aozora Foundation using a part of their donation.

Now, there are 5 types of activities. “Developing pollution-free communities”, “Relating the experience of severe pollution”, “Learning about nature and the environment”, “Making life worthwhile for pollution victims” and “Collaborating with others”. In mainly these five areas we conduct studies, make recommendations, hold public lectures, symposiums, and other events with citizen participation, gather documents and source materials, provide information, host observation tours and trainees, lend support for school classes, conduct international exchanges, and more.

Underlying all our activities are the two ideas that “Pollution must never occur again” and “Let’s use the bitter experience of pollution as the engine of community renewal.”

2. Environmental Education to Improve Air Quality

(1) Initiatives for Road Environment Education

From now on, I introduce Aozora Foundation's environmental Education to improve air quality.

Our air is much cleaner now thanks not only to the citizens' movement, but also to efforts by business and government. They have especially lowered the concentration of sulfur dioxide (SO₂), whose main emission source is factory smoke. But in Nishiyodogawa Ward, which has heavy vehicular traffic, air pollution by nitrogen dioxide (NO₂) and particulates is considered a problem. There is a tendency for the number of children with asthma to rise, which is happening in all major Japanese cities, not just Osaka. We have not yet won the battle against pollution.

It is said that in Japan 70 to 80% of air pollutants come from motor vehicle exhaust. Transportation, which is a part of our everyday lives, has a very big impact on the environment, but in the past transportation has not been much of a theme in environmental education. For that reason, the Aozora Foundation is trying its hand at environmental education by using transportation.

A. Citizen's School on the Transportation Environment

In 2003 we launched the Citizen's School on the Transportation Environment, a program of participatory lectures whose planning and implementation are by volunteers. There is a series of five to seven lectures a year. Thirty to 40 people participate in each lecture. Common to all lectures is the theme "considering the car-dependent society." While road and transportation issues sound simple, much of the content is specialized, and it is hard to know where to begin. These lectures use workshops and are run in a way that places importance on things that participants notice and on their exchange of opinions. By participating in the lectures, participants can become acquainted with more people who share the same awareness of problems.

B. Making Bicycle Maps

Another initiative is making our community bicycle-friendly so that Nishiyodogawa is an area with many people who cycle, because bicycles are non-polluting environment-friendly transportation. But there are problems because of illegal bicycle parking, collisions with pedestrians, and poor riding habits.

Since 2003 the Aozora Foundation has been conducting collaborative projects with local high schools for environmental education and community development. Beginning last year we have been engaged in "bicycle map making" with high school students. Students rode their bicycles around the Nishiyodogawa area, adding information to maps, such as "easy-to-ride place," "hazardous place," and "recommended place."

We think that by providing such information in the form of a map, it will turn the attention of many people toward problems such as riding habits and road structure, and help solve them.

C. Development of Educational Materials and a Program

We also develop a variety of educational materials and programs with the cooperation of instructors from universities, high schools, and elementary schools.

- Air Pollution Building Blocks

One example of this is “air pollution building blocks,” which we created in 2002. This is a learning aid which enables users to understand air pollution visually by stacking up building blocks. Users can see the amounts of nitrogen dioxide (NO₂) emitted by factories and by motor vehicles on a year-by-year basis. One can see that the sources of NO₂ have been shifting from factories to motor vehicles.

Children and even adults become absorbed in the work of taking the blocks in hand and stacking them up.

- Food Mileage Shopping Game for Learning about Food, Transportation, and the Environment

In the spotlight now is our recently developed educational tool called the “Food Mileage Shopping Game for Learning about Food, Transportation, and the Environment.” This allows players to learn, in the form of a game, about the burden imposed on the environment when transporting the foods on one’s dinner table by truck, ship, and other means. The unique feature of this game is that it approaches transportation issues through “shopping.” Players make a dinner menu using food photo-cards, which has information on the amount of CO₂ emitted in transporting the food. And then, they learn how much the food mileage their dinners have. Players can also learn about the differences between the various means of transportation which are used to go shopping, and each one’s environmental impact, and about the differences between the 1970s and now in terms of diet and the state of roads.

Saying “learn about pollution” gives people the impression of stiffly formal and difficult instruction, but these educational materials have people spontaneously turn their attention to the underlying problems of transportation and air pollutants, by approaching the subject through the everyday activity of shopping. We think this is the reason that these educational materials are so widely accepted.

- Bicycle Champion

This is a program for children to have fun learning the skills of safe bicycle riding in the form of a competitive event. Apparently, this was originally developed as a transportation education program in Germany. Although it is good to encourage riding bicycles because of their environmental friendliness, poor riding habits can lead to accidents. A course is set out on an athletic field, where children are taught skills such as negotiating narrow curves, making size estimates by sight from a distance, and stopping a bicycle at a certain spot.

(2) Green Driving Techniques

Green driving means taking care while driving to reduce one's environmental impact. We call it "Eco-Drive". Some of these techniques are: stop the engine at times such as when parked, avoid unnecessary idling, do not rev the engine, do not suddenly launch, accelerate, or brake the vehicle, and drive economically. Green driving improves fuel economy. About 90% of Japan's freight transport is by truck. Therefore reducing the pollutants emitted by trucks would do much to improve the environment.

Since 2003 the Aozora Foundation has been running a project to promote green driving in cooperation with businesses which use trucks. We have expanded the project every year, and in 2006 places of business from 39 companies participated, for a total of 315 trucks.

A "green driving assistance unit" is installed by the driver. The device uses audio signals to guide drivers and develop their green driving capability. At first the drivers felt perplexed, but their efforts paid off and we heard testimonials such as, "I can talk about it proudly to my kids" and "I'm a safer driver now." Estimates reveal that if all commercial trucks in Japan practiced green driving, it would achieve a yearly CO₂ emission reduction of about 3.6 million tons. Further, better fuel economy means reduced fuel costs for businesses.

To ask places of business for their cooperation and to broaden the initiative, the Aozora Foundation made posters and videos, held symposiums, and made other efforts. Communication is important for the smooth running of this project, and it is important that business proprietors and truck drivers proceed with the project while having a reasoned understanding of what green driving is, and what exactly will be accomplished by these skills. This too is environmental education. The green driving initiative has brought about changes in the awareness and behavior of participants. Improving the environment requires that the people driving vehicles themselves must change.

(3) NO₂ Measurements by Citizens

Having citizens personally investigate their community environment is one way of having them feel concern for their local environment and participate in environmental improvement and community development. In Japan citizens throughout the country check the quality of their air with kits that enable people to measure NO₂ with a simple technique. NO₂ is one of many air pollutants and can be seen as an indicator.

A capsule 5 cm high is set outdoors for 24 hours. The capsule contains filter paper impregnated with a chemical called triethanol amine, which adsorbs atmospheric NO₂. This filter paper is then put in Saltzman reagent, and the NO₂ concentration is analyzed by a measuring device.

Once every five years the NO₂ concentration is measured throughout Osaka, and last year was one of those years. There was a total of at least 2,000 participants, who set out about 10,000 capsules. Last December "Joint Korea-Japan Measurements" were conducted with people from the environmental NGO Green Korea in Taejon City, Republic of Korea. The Aozora Foundation also participated. We found out that the Koreans have a measurement method that is much the same, and we gained an even greater realization of the importance of these activities.

One of the Aozora Foundation's own unique efforts is having children measure air pollution using

capsules. Measurement results are shown on maps. Even within the same ward, high values are found along streets and at intersections, while low values are found in parks and shrine grounds. People can determine the causes of pollution by thinking about why measured values are different depending on the location.

3. In Conclusion

Air is essential for life. Breathing dirty air brings pollutants into our bodies. The outside environment and the interior of one's body are linked through the air. Further, air does not respect boundaries between nations. Perhaps education for air quality improvement begins with the knowledge of this axiomatic truth.

Until I started working at the Aozora Foundation, I too was not particularly aware of air pollution. But after meeting pollution victims and learning about their struggle with air pollution through my work at the foundation, I came to see the connection between air pollution and human health.

I would like to carry on with education to improve air quality while sharing information and collaborating with my counterparts in China and Korea.

This concludes my presentation. Thank you.