Environmental issues: interaction between scientists、policy-makers and citizens

Reporter: HU Jinghan

Shukmei Ho

Shukmei Ho is an internaltionally renowned scholar in environmental health, cancers, and related fields. She is currently Chair of the Department of Environmental Health, Director of Center for the NIH-funded Environmental Genetics, Associate Dean for Basic Research of theUniversity of Cincinnati Medical College, and Director of the Cincinnati Cancer Center, Dr. Ho has been editor/reviewer of numerous scientific journals.

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Reporter： Cincinnati experimentally legislated for the protection of air quality in 1881. And America issued Air Pollution Control Act in 1955. And later Parliament passed Clean Air Act. What experience can China learn from America's law-making practice?

Shukmei Ho： Cincinnati still has air pollution problems, although not on par with what Asia is enduring now. Law making in the US involves both bottom-up and top-down approaches, which can be an experience to share with China and other countries affected by air pollution.

While the top-down route tends to be coming from policy makers in the government and industries, it could also be coming from bottom up at the same time. Citizens and scientists can raise public awareness and elect new officials. They can make sure that officials listen and change, or they will not elect them. So when you want to make changes, you need both approaches. This is not exactly the case in China, but the

America experience shows that bottom-up can be a very powerful way to influence the long-term changes.

For management of air pollution, systemic team efforts are needed, including environmental engineering, energy, transportation, public health, and policy and law.Since air pollution can spread across administrative border, national and even international law enforcement would be more effective than just a city's effort.

Reporter： Now haze is under spotlight of Chinese society. We see that many big cities also went through air pollution, like LosAngelesphotochemicalsmogepisode in 1943, londonsmogincidents in 1952. Do you agree that environmental deterioration is inevitable during social development?How do you see the interaction between economic development and ecological environment?

Shukmei Ho： Rapid industrialization is often associated with increased pollution emission, which occurs in many countries. However, the extent of pollution should be minimized given available technology on pollution control.

Every coin has two sides. Haze, or smog as often called in the US, can be a prompt for clean energy and advanced air filtering technology use. Our environment is fragile in many senses, and a balance can be achieved with planning and enforcement.

Reporter： In 2006 you published a high influential paper about the correlation between Bisphenol A and Prostate Carcinogenesis. How do you see the transformation from scientific research to practical policy?

Shukmei Ho： Political and industry policy makers need to trust their scientific colleagues when making decision that can affect millions around the world.

When we first reported about the impact of Bisphenol A in 2006, the immediate thing actually happening was pretty good: Phthalate was banned although Bisphenol A was

not. The Toxic Toy Bill was the first thing passed in California. That means no toyscontain things like Phthalates is allowedfor children under 3 years old. The government began to understand the long-term effect of such substance. Now, there are 13 states, though not the federal government, already have their own measures against Bisphenol A. TheU.S. Environmental Protection Agency (EPA) has investigated Bisphenol A two times but still found statistics were not strong enough. They have maintained that there is no proven health effect. TheU.S. Food and Drug Administration(FDA) is the same. It is still a big struggle. There are thousands of papers confirming the adverse health effect. European countries and Canada have already banned this chemical,despite it generateshuge profit for the industry. FDA also say the evidence is not strong enough.

Reporter： What can scientists do under this kind of situation?

Shukmei Ho： I think scientists should team up with like-minded citizens.

First,publication and media attention are the first steps. Public awareness and precautionis key to the success of pollution control. From the perspective of a common citizen, everyone is happy with cleaner air and blue sky. The appreciation of higher air quality is one of the driving forces of environmental awareness and environmental health progresses. Citizens can become more powerful at a certain level. If people refuse to buy a certain products, then very soon customer power will overcome the short-term interest.

Right now there is a group of scientists who are looking into label scanning software. People can scan a label to find out what chemicals a product contains. The consumers choose on their owns. One such APP is called “Think dirty buy clean”. After you scan a bar code, it will give you a rating from 1 to 10. We can mobilize people to do that.

Reporter： APP, as you just mentioned, need big data to support its function. Big data is one of the hot words today in many fields. What's your opinion of its value in environmental health?

Shukmei Ho： Big data help a lot. With all this APPs, you can trace people, and you can see how one's health is associated with the ambient exposure.Application of big data in epigenetics or environmental health is a very hot area of research. Being able to analyze and process big data associated with health and clinical records in hundreds and thousands of hospitals for millions of people can create transformative ideals and new discoveries for epigenetic research and environmental health and medicine

Reporter：What's your recommendation to Chinese environmental scientists with regards to transformation of bench research to practice?

Shukmei Ho： I think environmental scientists should focus more on applicable fields. For example, developing technologies that can measure exposure to a mixture of exposures with high sensitivity/specificity, and big data linking to clinical records and genomics and epigenomics in human populations, and devise measures to clean up the environment, process waste and produce green chemicals.

What's more, I think environmental medicine will be a very important field for China in the coming decades. As the environment can cause long-lasting effects on human health and disease development, and China changes its environmental policies, disease patterns will change accordingly.