

News from Northeast Asia *continued*

PM (particulate matter) pollution in China

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PARTICULATE matter has become an increasing environmental problem in China due to the country's economic development, rapid urbanization, industrial expansion, and drastic increase in the number of motor vehicles.

At the beginning of 2015, 388 cities at or above the prefecture level across China started to monitor and publish their air quality data in accordance with National Ambient Air Quality Standards (NAAQS). In 2015, the lowest and highest 24-hour concentrations of PM_{2.5} and PM₁₀ in 388 cities were 11 µg/m³ and 125 µg/m³, 24 µg/m³ and 357 µg/m³, respectively. The annual average concentration of PM_{2.5} and PM₁₀ in the same cities were 50 µg/m³ and 87 µg/m³.

The most developed and highly populated city clusters such as the Beijing-Tianjin-Hebei region (BTH), the Yangtze River Delta (YRD), and the Pearl River Delta (PRD) are exposed to frequent heavy pollution due to their distinct regional characteristics. In 2015, the annual average concentrations of PM_{2.5} and PM₁₀ in the BTH region were 77 µg/m³ and 132 µg/m³. In particular, BTH and its surrounding areas (including Shanxi, Shandong, Inner Mongolia and Henan) still have the poorest air quality and highest frequency of heavy pollution in the country. In 2015, 70 cities at or above the prefecture level in the region recorded a total of 171 days of heavy or higher-level pollution and issued 154 alerts for heavy air pollution. In addition, the annual average

concentrations of PM_{2.5} and PM₁₀ in YRD were 53 µg/m³ and 83 µg/m³. In PRD, the annual average concentrations of PM_{2.5} and PM₁₀ were 34 µg/m³ and 53 µg/m³, respectively. The concentrations of PM_{2.5} in PRD are generally lower than those in the other two largest city clusters in China.

Sulfur dioxide (SO₂) and nitrogen oxides (NO_x) are key pollutants in ambient air quality. As data from the National Bureau of Statistics of China shows, there were major changes in air pollutant emissions from 2006 to 2014 in China. During that period, SO₂ emissions have shown a decrease-increase-decrease trend, and NO_x emissions have decreased since 2011, when there was a 29.8% increase over the previous year. The surge in emissions in 2011 may be attributed to changes in China's method of calculating NO_x emissions. Starting that year, data on NO_x emissions from motor vehicles began to be collected and included in total NO_x emissions figures.

There are many sources contributing to increasing air pollutant emissions in China, including the industrial, transport, and residential sectors. According to the National Bureau of Statistics of China, the industrial sector contributed most to the fine particulate matter in China. In 2014, the industrial sector was responsible for 88% of SO₂ emissions. The two sectors that contributed the most NO_x in 2014 were the industrial and transport (motor vehicle) sectors, which were responsible for about 68% and 30% of the emissions, respectively.

In general, motor vehicles have contributed a significant portion of air pollutants, particularly ambient PM_{2.5}. The contribution of vehicle emissions to PM_{2.5} in the BTH region in 2013 reached 31.1% (Beijing City), 20% (Tianjin City) and 15.5% (Hebei Province). Similarly, in Hangzhou and Shanghai in the YRD region of China in 2013, vehicle emissions accounted for about 40% and 29.2%, respectively. Vehicle emissions were responsible for 21.7% of the PM_{2.5} pollution in Guangzhou City.



Above: Chinese street seller in mask. Photo reproduced under a creative commons license courtesy of Thepismire on Flickr.

Air pollution poses an incredible challenge for China. In September 2013, China's National Action Plan on Air Pollution Control was issued by the State Council. The Action Plan was designed to reduce and prevent air pollution at the national level by 2017. Specifically, it aims to reduce the PM₁₀ concentration by at least 10% by 2017 (taking 2012 as a base year). Moreover, it sets a target that the concentration of PM_{2.5} in Beijing-Tianjin-Hebei region, Yangtze River Delta, and Pearl River Delta should be decreased by 25%, 20%, and 15%, respectively, by 2017. Furthermore, the 13th Five-Year Plan (FYP) was formally adopted in 2016. According to the 13th FYP, China's new target is to decrease the PM_{2.5} concentration by 18% by 2020, in cities that are exceeding the national air quality standard.

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Suing Beijing for harm caused by fine dust

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Members of the Korea Green Foundation bringing attention to the dangers of fine dust at a public debate at the Korea Chamber of Commerce and Industry on 21 April 2017 (photo courtesy of the Korea Green Foundation).

ON 5 APRIL, Arbor Day, I urgently filed a lawsuit against the Korean and Chinese governments. Six people, including attorney Kyung-jae Ahn and several homemakers, joined me in filing the joint action, requesting KRW 3 million per person on the grounds of mental distress due to fine dust. This case is the first suit on damages related to yellow dust as well as the first legal filing on cross-border air pollution in Korea.

Last spring, the amount of fine dust in the air in Korea reached unbearable levels. In a class I was teaching at Sogang University, the severity of coughing fits among the 300 or so students in attendance made it almost impossible to continue the lecture. Attorney Kyung-jae Ahn, who daily ascends the 300 meter tall Bongui Mountain in Chungcheong Province, unexpectedly developed throat pains and fits of coughing. The levels of yellow dust on that day were particularly high, and Ahn was diagnosed with asthma from unknown causes. We shared our experiences through social media and ultimately came to think of a lawsuit as a way to deal with the problem.

When I decided to engage in environmental activism 41 years ago, there were many opposing voices. There were even those who said, "If it means a better life, I'll fill my lungs with air pollution." That is how little people were concerned with environmental issues. When I predicted 29 years ago that the industrialization in China would have an influence on environmental conditions in Korea during an interview with the media, the issue received little attention from the government and society. Environmental groups in Korea, including the Korea Green Foundation, have persistently pressed the issue of the severity of fine dust and the need to devise measures to address it. However, the public continued to ignore the problem, and the government enacted the

same, ineffectual policies over and over again. They acknowledged that fossil fuels were the main culprit for the fine dust but did nothing to prepare measures to reduce the dependence on coal plants. Policies that eased regulations on diesel cars continued to be pursued. When the fine dust issue finally became a serious problem, the government was quick to cast the blame on China. As a result, Korea has become one of the most polluted countries in the world in terms of air quality.

In these circumstances, the reason Kyung-jae Ahn and I chose to file a lawsuit was to draw the attention of the general public and incite to action the government in both Korea and China. The objective of the suit is not to receive monetary compensation. Rather, it has a symbolic meaning in garnering interest and providing a stimulus for action. As stated in the petition, the purpose of the suit is to accurately determine the cause of the fine dust and to alert the people in both countries of the severity of the problem. I believe it is only then that the governments of the two countries will join forces to devise a reasonable solution.

The effects of the lawsuit were seen almost immediately. It was covered in various media in Korea, and inquiries concerning participation in and support of the lawsuit came pouring in. Also, in China, there was a deep interest in the issue, and the Global Times conducted an urgent public opinion survey on Chinese people's attitude concerning the topic. Domestically in Korea, with the hastened presidential election in the wake of the impeachment of President Park, measures to deal with the fine dust became a primary campaign issue among the major presidential candidates.

It is true that the prospects of winning the lawsuit are not particularly bright. There are no concrete laws in place, and it is impossible to determine whether China will cooperate. However, if there are no laws in place, then efforts must be taken to put them in place. The Trail Smelter dispute between the US and Canada and the acid rain case in Northern Europe are good examples of how harms to society can be brought to light as social issues through civil movements, developed into political issues, and eventually settled through diplomacy.

The most important task is determining the cause of fine dust and accurately gauging how it changes in accordance with the change of seasons. Following this,

measures need to be devised and a plan for reduction must be discussed between Korea and China. Once the exact cause and the scale of damage are clear, the two governments will join forces, and if that happens, various plans for solving the problem will emerge as a result. For example, an emissions trading system similar to the one in place for greenhouse gases can be applied for fine dust as well. From the perspective of China, this is a reasonable plan to consider because it reduces the costs of curbing emissions and enables the transfer of technology.

It is only the beginning in the fight against fine dust. It is not an issue that can be easily resolved by only garnering the interest of the government and people. There is a need for continual action such as expanding the scale of the lawsuit increasing public interest. At present, we have gathered people who wish to participate in the lawsuit and are forming a "100-person plaintiff group." If the amount of compensation exceeds 200 million KRW, the case will be brought before a panel of three judges, and this will lead to even greater social awareness.

Environmental lawsuits, when propped up by strong media support, can bring about great results. From experience, I know that there is a need for trials to be accompanied with social movements. In the future, we plan to regularly host panel discussions, inviting experts on the fine dust issue. In addition, we will conduct site visits of places that bring about fine dust, such as coal plants, with large groups composed not only of experts but also ordinary citizens to see the sources of pollution firsthand and seek out solutions altogether.

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