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Recommendations for Solving Difficulties in Investigation of Environmental Pollution Cases in China

Lei ZHANG*

Railway Police College, Zhengzhou 450053, China

Abstract Environmental pollution has caused wide social concern, and it demands immediate attention to striking at the crime in the environmental pollution. At present, there are difficulties of putting a case on file, collecting evidence, judicial identification, and presumption of causal relationship in investigation of environmental pollution cases. In accordance with current situations, it came up following recommendations: (i) widely collecting case clues to solve the difficulty of putting a case on file; (ii) improving the ability of collecting evidence and standardizing the evidence collection, to solve the difficulty of evidence collection. (iii) including the environmental pollution judicial identification system, and unifying the identification standards, to solve the difficulty in identification. It is recommended to use the epidemiological causal relationship theory combined with enough high-quality evidences to solve the difficulty in presumption of causal relationship.

Key words China, Environmental pollution, Investigation of cases, Difficulties, Recommendations

1 Introduction

Good natural environment is the material condition for social sustainable development and concerns well-being of people and future of the nation. However, with the rapid development of China's economy, the environmental pollution cases frequently occur, the ecological environment increasingly deteriorates. These seriously hinder the economic sustainable development, harm people's health, and influence social stability. Environmental pollution has become a major social harm, causing widespread concern in society. The Amendment (VIII) to the Criminal Law of the People's Republic of China included the crime of serious environmental pollution accident into the environmental pollution crime, reduced the crime threshold, reinforced the enforcement efforts, marking that China's environmental pollution criminal legislation is gradually improving. However, according to recent years of judicial practice, because the environmental pollution is a new type of crime, the public security organs have many improper actions, leading to ineffective investigation and prosecution of some crimes, which is far from the expectation of the public. In view of this situation, we analyzed the problems in the investigation of environmental pollution cases by public security organs, and accordingly came up with pertinent recommendations.

2 Characteristics of environmental pollution cases

2.1 The number of cases is increasing with distribution much in the east and little in the west Since the crime of environmental pollution was included into criminal offenses in 1997, the number of cases identified as serious environmental pollution crime has been relatively small. Data indicated that, from 2001 to 2010, there were 37 res judicata with annual average of 3.7 ca-

ses^[1]. However, since 2012, the number of criminal cases of environmental pollution in the whole country showed a significant increasing trend. It is believed that such trend is connected with Amendment (VIII) to the Criminal Law of the People's Republic of China included the crime of serious environmental pollution accident into the environmental pollution crime, reduced the crime threshold, and reinforced the enforcement efforts. In the Amendment (VIII) to the Criminal Law of the People's Republic of China, Article 46 amended Article 338 as: "Whoever, in violation of the state provisions, discharges, dumps or disposes of any radioactive waste, any waste containing pathogens of any infectious disease, any poisonous substance or any other hazardous substance, which has caused serious environmental pollution, shall be sentenced to imprisonment of not more than 3 years or criminal detention and/ or a fine; or if there are especially serious consequences, be sentenced to imprisonment of not less than 3 years but not more than 7 years and a fine." On June 19, 2013, the Supreme Court and Supreme Procuratorate Jointly issued the Interpretation on Several Issues Concerning the Applicable Laws in the Handling of Criminal Cases of Environmental Pollution listed types of the serious environmental pollution, which greatly reduces the crime threshold.

2.2 Gang crime and professional crime In order to seize the illegal profits and evade punishment, the actor of environmental pollution crime constantly changes method of crime, and their crime activities become more hidden. However, driven by the interests, crime actors constantly change their crime methods. They change their direct discharge to discharge in other place, they assign special person to make treatment, and the gang crime and professional crime become obvious. Some even take environmental crime as profession, for example, they set up environmental protection enterprises, purchase vehicles and ships, to engage in illegal discharge and dispose waste.

2.3 Wide violation and serious crime consequences

the published environmental pollution crime cases, China's environmental pollution is mainly manifested as air pollution, water pollution and soil pollution^[2]. Compared with other crimes, the area and victims of environmental pollution crime become wider. According to 2015 Report on the State of China's Environment, in 161 cities with new standard monitoring of air quality, only 16 cities reached the air quality standard, while 145 cities had air quality exceeding the standard^[3]. Groundwater test results show that 60% of groundwater quality failed to reach the standard. Compared to other crimes, the environmental pollution has serious, lasting, and irreversible harm consequences.

3 Difficulties

- 3.1 Difficulty in putting a case on file In the environmental pollution crimes, sources of materials for putting cases on file had following problems. (i) There is no direct victim in the pollution of environmental crime, most crimes infringed upon public interests and did not show definite and single characteristic of general crimes. As a result, the bystander effect of common people appeared, they were unwilling to report the environmental pollution cases. Even some cases had clear victims, the victims often took civil action, and few victims reported cases to the public organ. (ii) The environmental pollution crime activities become hidden and it is not easy to identify. Most environmental pollution crime activities occur in waste landfill areas, waste burning areas, and factory sewage areas. These areas generally are located in areas with vast land but little population in the urban development plan.

 3.2 Difficulty in collecting evidence According to investiga-
- tion of environmental pollution crime in China, there is difficulty in collecting evidence of environmental pollution criminal cases, mainly manifested in difficulty in collecting verbal evidence, leading to weak evidences of criminal cases. In accordance with provisions of the Criminal Procedure Law of the People's Republic of China (2012 Amendment), a witness statement may be used as a basis for deciding a case only after it has been cross-examined in court by both sides, the public prosecutor and victim as one side and the defendant and defender as the other side, and verified. If a court discovers that a witness has committed perjury or concealed criminal evidence, the witness shall be handled in accordance with law. However, in practice, the environmental pollution criminal cases are often investigated by the administrative law enforcement departments such as environmental protection, land and sea, and these law enforcement departments often let the inquiry (interrogation) object leave.
- **3.3 Difficulty in judicial identification** First, there are few professional and credible judicial identification organizations in most areas. Compared with the traditional judicial identification items such as handprints, footprints, tool traces, bullet traces, and handwriting, there are fewer judicial identification organizations in environmental pollution cases and such organizations are less professional and lack public trust. The appraiser participating in the judicial identification is not a professional in the related

field. Thus, his opinion may not be accepted after the cross-examination link in the court. Second, it lacks unified identification criteria and the identification period is too long. As the environmental pollution identification is not in the identification scope of forensic, material evidence and audio and video data identification, there is no unified technical identification criterion, different identification organizations may have greatly different identification opinion. Besides, the identification of environmental assessment involves a wide range of pollution factors, the pollution factors are various, and it involves many other factors. Thus, the identification is relatively complex.

Difficulty in presumption of causal relationship Supreme People's Court and the Supreme People's Procuratorate listed 14 cases of serious environmental pollution. Such legislative change is of great realistic significance for more severely striking the environmental crime and controlling the environmental crime from the source. However, such legislative change still fails to solve the difficulty in presumption of causal relationship of some environmental pollution crimes fundamentally. Therefore, there is a great difficulty in proving the causal relationship between the criminal action and the damage consequence. According to provisions of Criminal Procedure Law of the People's Republic of China (2012 Amendment), such burden of proof is undertaken by the prosecution authorities. In the practice of investigation, some case handling organs have to give up the investigation of environmental pollution criminal cases because they can not prove the causal relationship.

4 Recommendations

Widely collecting case clues to solve the difficulty of putting a case on file In view of difficulties in investigation of environmental pollution cases, we came up with following recommendations. (i) It is recommended to establish offence-reporting reward mechanism to expand the clue source of cases. Since most environmental pollution cases do not have direct victims, the masses do not have enthusiasm for reporting cases. It is recommended to establish the case reporting reward mechanism and disclose the case reporting reward methods. For the clues reported by the masses, if they are true, the person reporting the case or clue should be rewarded, to stimulate the enthusiasm of common people for monitoring. Second, it is recommended to establish effective monitoring mechanism to detect environmental pollution crime. In view of the hidden characteristic of environmental pollution crime activities, public organs should actively and closely cooperate with administrative law enforcement departments such as environmental protection, land, and sea, and deeply excavate key pollution areas. Some local public security organs carry out regular or irregular inspection tour, monitoring, and evidence collection with the aid of unmanned aerial vehicle (UAV). Such practice is worth learning and can be promoted in areas with better economic conditions.

shortest path by driving is 7764.602 m, longer than the shortest distance path; since the shortest distance path does not consider traffic lights, intersection turning and other factors, in the total driving time, the driving time for the shortest distance path is shortest, and if considering traffic light resistance and turning resistance, the driving time

for the shortest distance path is 19.234 min, namely the driving time for the shortest path by walking; similarly, the shortest total walking time for the shortest distance path is 151.832 min, because it does not consider traffic lights and intersection turning factors, and the total walking time for the shortest distance path is 156.499 min.

Table 4 Statistical results

Path class	Total distance//m	Total driving time//min	Total walking time//min
The shortest distance path	7591.592	14.568	151.832
The shortest path by walking	7764.602	18.866	159.625
The shortest path by driving	7591.592	19.234	156. 499

5 Conclusions

The shortest path analysis based on road network is the focus of network analysis in GIS and urban planning. Reasonable planning of agricultural transport routes can also effectively reduce the agricultural prices. The shortest path analysis in this paper can be done to search for the shortest distance path, the shortest path by driving and the shortest path by walking between any two points in the road network, so it is the important application of network analysis in our daily travel, meeting the experimental design requirements.

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- 4.2 Improving the ability of collecting evidence and standardizing the evidence collection, to solve the difficulty of evi**dence collection** In order to solve the difficulty in collecting evidence for investigation of environmental pollution cases, the investigation organ should take following measures. (i) It is recommended to effectively enhance the ability of the public security organs in collecting evidence. A large number of successful cases create conditions for case handling organizations summing up evidence collection experience and building the evidence system. The Ministry of Public Security should comprehensively establish the evidence system, issue the evidence collection guidance opinion, hold special training classes, disclose typical cases, and promote successful experience. (ii) After receiving and reporting the case, the public security organ should immediately assign personnel to go to the site and make careful investigation. Although it is difficult for the administrative law enforcement organizations to rush to the scene in the first time, it is impossible to obtain the most direct evidence of environmental pollution, but such case has crime scene. According to the experience, the crime scene is the inevitable result of crime activity. In the crime scene, there will be various traces of evidence left by the criminal.
- 4.3 Including the environmental pollution judicial identification system, and unifying the identification standards, to solve the difficulty in identification In order to enhance the

objective and effective judicial identification opinions, we should do a good job in following aspects. (i) It is recommended to include the environmental pollution judicial identification system, and unifying the identification standards, unify the identification technical criteria and regulations. (ii) It is recommended to select a number of professional identification organizations and enhance their credibility. All environmental pollution cases disclosed involve the identification of environmental pollution. (iii) It is recommended to establish and improve the legal system and standardize the identification cycle, to satisfy the demand of case handling. At the national level of legal system, as the legal management organization of judicial identification, the Ministry of Justice should promptly issue departmental rules and regulation, and work out unified regulations on the judicial identification from the legislation, so as to solve the problem of arbitrariness of judicial identification organizations in the identification time limit.

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