

Suggestions on the Protection Zone of Construction Project Environmental Management in China

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Abstract : Setting protection zone is an important measure of construction project environmental management in China. This paper first introduces the concepts, principles and approaches of all kinds of protection zones (health protection zone, atmosphere environment protection zone, project security zone, and related policies and environmental protection standards) in the environmental impact assessment of construction projects. And then based on the high frequency environmental accidents, the paper discusses the effect, advantage and disadvantage in environmental management of the different protection zones. In the end the paper further discusses the perspective and scope of the research on protection zones in respect to both advantages and disadvantages.

Key words: construction project environmental management; environment protection zone; health protection zone; safety distance

Currently, social conflicts due to environmental-related pollution are on the rise. These conflicts directly or indirectly are related to the construction project's protection zone which is given more and more attention in China. During the environmental impact assessment of construction projects, the environmental rationality of the location depends on the city overall planning and resources sustainability as well as the agreement from the public. Apart from these factors, the protection zone is equally important. The proper protection zone leads to less social conflicts and reduce the impacted areas^[1].

At present there are various protection zones for the environmental impact assessment of construction projects. Among these protection zones, some are state standards and some are industry standards; some are regulations and laws and some are technical guides. Especially, there is no unique governmental sector to be in charge of protection zones, which results in many problems in projecting environmental management. Therefore, it is necessary to study the key issues of protection zone starting from the concept, and then come up with the framework and principles of protection zones. It will eventually provide the reference to environmental impact assessment and environmental management for construction projects.

1 Definition of Protection Zone for Construction Projects

1.1 Atmospheric Environmental Protection Zone

The concept of atmospheric environmental protection zone was firstly addressed in the 《 Guidelines for environmental impact assessment – Atmospheric environment 》 (HJ2.2-2008) issued in 2008: "In order to protect the healthy people and reduce the air pollution, it should be set the environmental protection zone outside the boundary of the equipment which releasing harmful gas," and "the habitants who live within the protection zone should be given

compensation to move into other areas or the layout of the construction project should be optimized or changed."

1.2 Health Protection Zone ^[2]

The concept of health protection zone was firstly addressed in 1987 by Ministry of Health with "the health protection zone refers to the minimum distance between the locations releasing contamination elements to the boundary of living areas." According to Section 7.2 of 《Technical methods for making local emission standards of air pollutants》(GB/T13201-91):" if the content of fugitive emission exceeds the threshold set in 《Ambient air quality standards》(GB3095)和《Hygienic standards for the design of industrial enterprises》(TJ36)in the living areas, then the location of emission sources and the living areas should be set the health protection zone. Within the health protection zone, it is prohibited to set the residential buildings and it is also needed to be afforested."

In order to prevent the physical pollution (e.g. noise and electromagnetic radiation etc.) and chemical pollution (e.g. toxic emission etc.), the ministry of health and the industry association issued more than 30 regulations and standard to set the protection zones in last 30 years.

1.3 Safety Protection Zone

Safety protection zone ^[3] means the minimum distance which is required to prevent or reduce the injury, toxicities, and the property damage during the safety accidents like fire, explosion and leakage. Safety protection zone is widely used in safety assessment, but now it is paid more and more attention in environmental impact assessment. The scope does not only include the concepts mentioned in 《Fire prevention code of petrochemical enterprise design》、《City fire protection planning and construction management regulations》 which mainly is related to fire and explosion, but also cover the dangerous chemical safety based on the adverse outcome of dangerous chemical risk, enterprise safety protection measures as well as the protection of the people. The protection zone in risk conditions is not taken into count in this paper.

1.4 The environmental protection requirement of enterprise location selection

Among some pollution control or pollution prevention technical standard for special construction projects, there are special requirement to select the enterprise's location like《Standard for pollution control on hazardous waste storage》(GB18597-2001)、《Standard for pollution control on the security landfill site for hazardous wastes》(GB18598-2001)、《Standard for pollution control on the storage and disposal site for general industrial solid wastes》(GB18599-2001)、《Standard for pollution control on the landfill site of municipal solid waste》(GB16889-2008)、《Technical standard of preventing pollution for livestock and poultry breeding》(HJ/T81-2001)和《The notice regarding to management of environmental impact assessment of biomass power generation projects》。

Recently, ministry of environmental protection publishes a file about amending of the three standards of wastes (GB18597-2001, GB18598-2001 and GB18599-2001). In the amending files, the most important change is about how to give the protection zone between the waste site and the

protected objects.

1.5 Industry Access Conditions

There are also many industry access conditions regarding the enterprise location selection and environmentally sensitive point like 《Access conditions for calcium carbide industry》(2005)、《Access conditions for copper smelting industry》 (2006)、《Access conditions for Chlor-alkali industry (caustic soda, PVC)》 (2007)、《Access conditions for lead and zinc industry》 (2007)、《Access conditions for secondary lead industry》 (2012)etc.

2 Comparison of the different protection zones

This paper compared the calculation methodology and the respective governmental sectors. Through the comparison, we find that there are many problems in environmental management for the current construction project with regard to different protection zones:

(1)The methodology is not proper. The protection zones in many cases are the fixed value, except air polluted projects. The specific conditions like terrain and meteorology are not taken into accounts for different enterprises, especially noise polluted projects.

(2)The environmental elements are simple. Most of the protection zones are set by health department and the environmental element is normally rather simple. Currently only air pollution, noise pollution and electromagnetic radiation pollution are taken into account. The other elements like soil and water are not considered, but soil and water highly impact on people's health.

(3)Management is inefficient: There is no unique governmental sector to be in charge of protection zones which cover the areas like industry, health, safety and environmental protection. Each governmental department has their own management standard and approach. At present, for the environmental impact assessment, all protection zones are needed to analyze in the assessment report. But for the environmental sector which takes responsibility of environmental impact assessment, they do not have the consolidated standard and therefore lack of the power of execution.

3 Suggestions on Protection Zones for Construction Projects

The protection zones are critical to the health of the habitants living around the construction project and also to the efficient of land use. From different angles, the protection zones are divided into environmental protection zone, health protection zone and safety protection zone. Based on that, this paper proposed: 1) for all protection zones, the impact on environment from the construction projects should be considered and the protection zone should be based on the environmental elements (Fig 1). 2) To improve the efficient of management for the governmental sectors, each department should focus on their own protection zone, namely, the environmental sector focuses on environmental quality, health sector on the health of people and safety sector on emergency management (Fig 2).

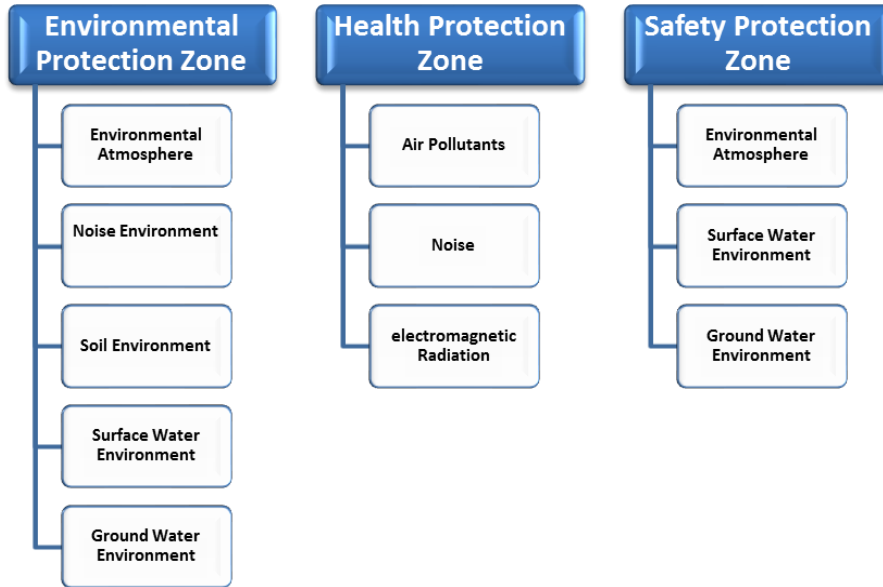


Fig1 The system of protection zones for construction projects



Fig2 The management system of protection zones for construction projects

4 Outlook of Protection Zones for Construction Projects

According to the protection zone management, we believe there are some areas needed more research in the future:

- (1) Environmental protection zones: the technical approaches and management standard for the other environmental elements apart from atmosphere.
- (2) Health protection zone: With the improvement of processing technology, the standard of health protection zones for each industry will be reviewed and revised.
- (3) Safety Protection Zone: The protection zone will be based on the risk analysis.
- (4) The combined management model for these three protection zones.

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