
Case Study Summary – Environmental Damage Assessment in a Guizhou Coal Mine

EGP-Guizhou
环境治理项目-贵州项目

Improving access to environmental justice
to protect people's environmental rights
in Guizhou province

推动贵州环境司法发展 维护贵州公众环境权益

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Summary of coal mine case study

The aims of this case study are threefold: 1) demonstrate how the Swedish process and tools for assessment of environmental damages work in practice, 2) provide expert advisory in the specific case to the province and 3) investigate discrepancies between the Chinese and Swedish methods and from those find suggestions for improvements.

The Swedish process contains four main steps. Step 1, the preliminary survey, is mainly performed at the desk. Gathering available information on geology, hydrology, historical activities from both public and private archives supplemented with interviews and perhaps a site visit. Step 2, the site investigation and the risk assessment, means practical work including sampling and investigations on site as well as theoretical calculations of risk. Step 3, risk valuation, is the process step where health and ecosystem risks are put in a bigger perspective assessing the monetary and other costs for compensations, also allowing parties to weigh these against one another. The final step, the remediation, is the last and most often the most costly step of the process.

In the case study, no background material was available besides Google Earth maps. This meant that the uncertainty of the assessments increased considerably. The result of the preliminary survey (step 1) is that the coalmine is risk class 4, the highest risk. The classification enables comparison and prioritization with other contaminated areas, so the risk class 4 means that this site would probably come out as one of the objects for further studies.

A simplified site investigation and risk assessment were carried out to fill in some of the blanks from the preliminary survey and to investigate whether possible contaminants in the effluent water from the abandoned mine pose a threat to humans or the environment. A number of samples were collected, in both water and soil to capture individual contribution from sub-streams and to establish a mass-balance for contaminants in the area.

The risk assessment states that elevated level of risk is potentially found with respect to sulphur, but site specific EQS's needs to be developed to assess this risk. No need of remediation can however be attested from this site investigation and risk assessment. The need of remediation is determined by the status (sensitivity and other polluting areas) of the recipient lake.

The implemented treatment, i.e. infiltration bed and sedimentation chambers, is completely mistargeted. It is most likely a result from poorly defined hypotheses and remediation aims. Treatment of the outflow from Karsts and the mine could be justified from aesthetical point of view or if the levels of contaminants in the recipient lake are such that the contribution from this source is not accepted. The most effective treatment for iron is aeration and precipitation like in the settling pond, and for sulphur some sulphur retaining plants could be of use. Any such measures would however require active management and would create a waste stream that needs to be taken care of.

Expert's recommendations for future work

Following recommendations are being forwarded to the Guizhou region for the future work concerning Environmental Damage Assessment and risk assessments based on the coalmine case study:

1. A bigger perspective must be used for prioritization of actions

Cases such as this one, where actions have been taken even if they are not required from a health or an environmental point of view, are quite common. To avoid these cases assessments needs to be done using a bigger perspective. It is suggested that a responsible body conducts preliminary risk assessments as desktop studies along with site inspections, and from these compile a list of top priority areas, which are set to move on to the next stage.

2. Background material should be readily available

If preliminary assessments of environmental risk and damage are to be made, background material like maps of bedrock, soils and operations needs to be made, if not public, at least open to those assigned to the task. The operations also needs to be willing to expose how, when and which chemical that have been used. If there is no operator present, historical research must be conducted.

3. Environmental quality standards must be set

The Guizhou province has a unique geology and nature. This means that a unique set of environmental quality standards should be set that will establish a kind of benchmark or a reference to which standards should be aimed towards. It would help authorities to determine to which extent a contaminated site shall be remediated or compensated.

4. Assessment of the Lake should be done on a catchment area scale

The question of whether the quality of the drinking water of the Lake is at risk or not cannot be answered if the whole contaminating potential is not assessed. An inventory of all possible sources should be made in line with the first recommendation, along with monitoring of the lake water quality. This would result in an action plan that would ensure good drinking water quality for Guyiang – both today and in the future.

The recommendations above are made from a non-administrative point of view, just taking into account the possibilities to conduct a robust environmental risk assessment. Policy recommendations from judicial and organizational points of views are made in other reports in the EGP project.

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