

The "red mud" dispute: interdisciplinary approach with the Human-Environment Observatory "Bassin Minier de Provence"

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For more than 50 years, the treatment of bauxite residues from the Gardanne alumina plant is the subject of a conflict between the plant, the state administrations, local authorities, environmental associations and residents. A first dispute had occurred between 1965 and 1967 with the discharge of residues in Mediterranean Sea. After the Barcelona Convention (1992) and the creation of the "Parc National des Calanques", the plant had been obliged to modify the residues treatment, with a liquid effluent, always discharged in the sea, and solid wastes which are stored in Mangegarri site. Then, a new dispute had started in 2014, always about the discharge in the sea but also about the storage on land. The dispute was very intense between 2015 and 2016 and is still relevant.

To focus debates, Ministry of Environment had created, in 2016, a "Commission de Suivi de Site" (CSS), with representatives of state and local authorities, management and employees of the plant, environmental associations and residents. After one year of operation, the CSS had been divided in two subcommittee, one for the sea discharge and an other for the storage on land. These committees have no decision-making role, but are spaces of information, explanation and discussion. Formally, there are no scientific representatives in these committees, but, in some case, scientific can be invited to the meetings.

An OHM (Human-Environment Observatory) is a study of socio-ecosystems manmade tool, designed to respond to their complexity by implementing a comprehensive approach by combining the study of environmental science and creating dynamic for the development instead of interdisciplinarity needed. For this, each OHM is organized around a focal object - which will be studied by all environmental sciences - a founder event came deeply upset (e.g. a mining area - object - and stopping the operation - founding event). The DRIIHM *LabEx, Device for Interdisciplinary Research on human-environments Interactions*, aggregates the 12 human-environments observatories in a network. The OHM *Bassin Minier de Provence* (OHM-BMP) had been the first OHM created in 2007 by the Environment Institute of CNRS. Located in the east of the department of Bouches-du-Rhône (SE of France), between Marseille and Aix-en-Provence, it concerns seventeen towns just over 100,000 inhabitants. For nearly two centuries, the unity of this space has been built around the lignite mining and industrialization induced by the mine. This area is typical of suburban and industrial dynamics in the Mediterranean area. These dynamic, often contradictory, have been particularly affected by the permanent cessation of mining in 2003.

Long before the media coverage of the red mud dispute, OHM-BMP had launched interdisciplinary studies about the potential environmental and sanitary impacts of land storage. In this way, the OHM-BMP had provided scientific informations which had been recognized as independent by the different protagonists of the conflict. This is largely because these studies are financed with CNRS and Labex money and are not an order of one or another

protagonist. The other side is that the financial resources are limited and not sufficient for a complete work. It's also regrettable that the state authorities do not consider these studies which, in contrast, have the confidence of the civil society. With their interdisciplinary approach and their opening to society, the OHMs are able to participate to the increase of scientific transparency, arguments analysis and explanations of issues – all things which are necessary to the resolution of a conflict, in a participatory approach.

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