EDITORIAL

The environment legislation and its regulations formulation have very particular characteristics that make it different from other type of laws. The fundament and the philosophy of a environmental control regulation–which sets admissible levels for the contaminants spill in a resource, be it air, water or land – are based in concepts such as environmental management and conservation. In this sense, we could state that in favor of the environment protection, the current society shares the concept of the duty to restrict the spill of any type of contaminant to “reasonable” levels.

This initial idea allowed to develop a second concept: “there is a maximum possible rate or a practical one for control of contaminant emissions, for contamination sources of a same kind” which gave room to “*end-of-pipe control*” (De Nevers, 2008). With this fundament, and having as a goal the environment preservation, it was practical to impose this control rate to all emissions sources of that same kind. According to some authors, this philosophy was the base for most industrial control activities, mainly in England between 1863 and 1970 (Parker, 1980). Through it, it was intended to impose *the maximum possible control* in order to achieve *the minimum possible spill*, and get *the cleanest possible resource (air, water or land)* (De Nevers, 1997).

The basic fundament for *maximum possible control* has been developed in several ways, and some other variables have been added to it, such as: costs, market, social acceptability, among others, that make part of the different considerations for environment control. Nowadays the discussion is on the Best Available Control Technology (BACT) or the Reasonably Available Control Technology (RACT), to produce the Lowest Achievable Emission Rate (LAER).

Such concepts have introduced control possibilities not only at the end-of-pipe, but in a) the source, through the optimization itself of processes liable to produce contaminant emissions, including issues related to prime matters; as well as in b) the environment, that includes among other considerations, the accumulated effect, and the capacity to self-purify or resource resilience. This perspective allows establishing specifically industrial zones and attenuation areas, in favor of the specific conditions of each resource (e.g. wind direction and speed, water sources conditions, land characteristics), that affect the processes of contaminants transport and spread.

These analyses have permitted to establish in most regulations, such as the EPA ones, numeric values as permissible emission limits, expressed in terms of concentration and/or contaminant load according to the type of process. Concurrently, it has also been necessary to establish measuring and evaluation methods or the verification of its compliance.

As a result, many authors agree on considering this type of regulations as a factor that has encouraged the permanent development of control technology. A specific case is the automotive sector, where it has been obtained a high rate of reduction in vehicle emissions in the world in the last 15 years.

The main disadvantage of setting regulations in terms of numeric values in most countries has been the difficulty to establish procedures that allow gradualness in its compliance, according to the legislation in each country and to the technological changes. That is why it is usual to find, in some countries, periodical revisions every 10 or 15 years (De Nevers, 1997).

One of the aspects that has been developed in the framework of the formulation of environment policies is the econonomical assessment of its objectives. According to the basic principles of the Economic Theory, stating that every action or change introduced into the society will represent "*costs*"–also called *marginal costs* – and "benefits" – called *marginal benefits* – for the entire society, or for some of its members. In this sense, it is necessary to consider many variables (tangible and intangible) that allow involving the costs derived from the environment damage because of the emissions, in order to determine or establish a standard or "reasonable emission rate" for our society, according to the *Reasonably Available Control Technology* (RACT).

In this optimal level, the *marginal cost* for emissions control must be equal for all contaminant agents and simultaneously, equal to the adding of the *marginal benefits* for all individuals, originated in the contamination reduction.

The determination of this optimal level of contamination requires the knowledge of the functions for control cost and environment damage cost; however, due to practical difficulties in their determination, this is based on the equipment costs, their maintenance and operation; as well as the steps for emissions control and the mitigation of environment impacts. Such determination presents an objective approach and depends on the estimation of the cost for technology inventory and available measures. The determination of the function for damage cost involves the assessment of the public goods and services and those related to human health.

In terms of the goods, this value reflects the perception of the society on the provided benefits by the environment or the maximum value that particulars are willing to pay for the use of the environment. In the case of the human health, it involves the damage to people with diseases, death and deformities, among others. It is important to note that the calculation of this function is quite subjective and will vary from one individual to another, as well as from a social group to another (Azqueta, 1994; Freeman, 1997).

César Augusto García-Ubaque
Director