

2.8 Case report from USA: Solid waste program in Massachusetts (O. Renn, Clark Univ., Worcester USA)

Solid waste management in the United States is mostly regulated on the state level. Although federal guidelines exist to give orientation and advice to each state, the responsibility to manage the waste stream and to reduce the risks for human health and the environment lies within each state government. The conditions for waste management in each state differ considerably: States, such as Nevada or Nebraska, have ample space for siting landfills whereas states, such as New Jersey or Massachusetts, are in the middle of a solid waste crisis since the existing landfills are almost filled up and new landfills are not available. The situation in the latter states is probably more similar to the conditions in most European countries, so that the following paragraphs will highlight the recent attempts to manage the waste crisis in the state of Massachusetts.

The legislation in Massachusetts requires an integrated waste management plan consisting of four elements: proper closing of existing landfills, building of new incinerators, promotion of waste reduction measures, and initiation of waste recycling programs. Communities are required to provide a plan for waste management that incorporates these four elements and specifies the measures and incentives for waste recycling and reduction. As of March 1989, hearings are still pending on the state intention to regulate the amount and composition of packaging material for consumer products and to give monetary incentives to assist communities in waste reduction programs.

The first element of properly closing existing landfills requires substantial funds, but has not evoked any major public controversy. In contrast, the siting of incinerators is accompanied by fierce public protest and political controversy. Many incineration projects have been postponed or were even cancelled due to public opposition. Concerns focus on potential air pollutants and the disposal of the remaining ashes. The volume reduction in mass burn technology dominantly used in Massachusetts incinerators amounts to more than 90 percent, but the remaining 10 percent in ashes (including fly ash) are regarded as more hazardous than the original waste. The federal Environmental Protection Agency (EPA) has still not classified residues from incinerators as either hazardous or solid waste. The operators of landfills are therefore uncertain whether to accept incineration waste or not. If ashes were to be classified as hazardous waste, special treatment would be required (similar to chemical waste). This would imply a substantial increase in cost.

In accordance with federal and state regulation, incinerators have to meet environmental standards with respect to air pollutants and technological per-

formance (temperature, scrubber technology, etc.). The pollutants SO, NO, CO and Ozone have to be monitored constantly whereas organic toxins are monitored in regular time intervals (usually 90 days). The concentration of pollutants has to be reported quarterly to the state environmental protection agency.

The third element "source reduction" is the most difficult to implement. The social and political system in the United States is traditionally rooted in a free enterprise system in which consumer preferences should not be regulated. If consumers prefer fancy packages, so the common argument, they should have the freedom to purchase them. There is also an equity issue involved: The manufacturers in Massachusetts might face severe disadvantages on the market if they are forced to ban special material or to change the alleged attractiveness of packaging. Competitors from other states may take advantage of this and increase their respective market share. With the exception of a state mandate to pay refunds on cans and bottles, the source reduction program is still in its infancy and may well take years to trigger any measurable success.

New programs to promote recycling of waste have been initiated in many communities in Massachusetts. Similar to the situation in most European countries, separation of waste after the collection is usually uneconomical and may also lead to undesirable occupational hazards. Rather separation at the source, i.e. each consumer, is the most preferred solution. In Springfield, a recycling program was launched in which consumers were given different waste compartments so that they were able to separate different waste material at home rather than asking them to deliver their sorted waste to a nearby container. Other communities experienced with monetary incentives for citizens who volunteered to participate in a waste separation project. Overall the results show that a carefully designed and broadly communicated recycling program accomplishes a considerable compliance rate of up to 40 to 50 percent although the enthusiasm declines gradually over time. Mandatory recycling programs have not been implemented at all because they are regarded as illegitimate intrusion into the freedom of citizens.

In evaluating the waste management program in Massachusetts we found some interesting aspects that either facilitated or aggravated the political situation and the success of community recovery programs.

1. All waste disposal options were accepted more readily if the waste was not imported, but generated within the community. Decentralized landfills or incinerators had a higher chance to gain public approval rather than cen-

tralized units. This may lead to a clear conflict between the two goals of large scale economic benefits and public acceptance.

2. When a community succeeded in conveying the integrated nature of the waste program and in emphasizing the waste reduction and recovery aspect of its program, it had less difficulties to convince the local environmental groups to approve of waste facilities such as landfills for ashes or incinerators.
3. The American public is highly sensitized to the process of decision making. Public groups demand access to the relevant information (and are legally entitled to receive them). All group interests have to be seriously considered and all options have to be discussed in public. This delays the process considerably, but is the only way to seek the approval of the relevant stakeholders.
4. Involving public groups in the decision process is another possibility to overcome opposition and at the same time use the resources of these groups to foster recycling programs. In Worcester, the head of one of the local environmental group was asked to chair a committee on waste management. When she started her job, she was rather opposed to all previous waste management plans of the city. After considering all the options, the committee finally accepted a plan that included the building of a large incinerator. Interesting to note that other environmental groups were upset about this plan and different grass root organizations started to fight against each other. Finally, the incinerator was built and is presently in operation.

In contrast to the situation in the Federal Republic of Germany, most waste handling facilities are privately owned and operated. Most incinerator companies earn a substantial profit by operating these facilities. Such an arrangement has two major advantages: first, the community government can act as a neutral controller and facilitator in the political decision process, and second economic costs are directly imposed on the user of these facilities. The more citizens demand protection and risk reduction, the more they have to pay for their waste disposal system. In some communities waste disposal fees have increased by 150% during the last five years. The economic repercussion of politically enforced regulation acts as a powerful incentive to keep demands for a clean and healthy environment within the limits of cost-effectiveness.

In summary, solid waste management remains a serious problem in most U.S. states. The only potential solution lies in a combination of source reduction, waste recycling, incineration, and landfilling of remaining residues. The state of Massachusetts is approaching such an integrated program, but is still in the infancy of its implementation.