

# IMPORTANCE OF TRAINING IN THE MANAGEMENT OF SMALL WASTEWATER TREATMENTS PLANTS

García-Martínez, Fco. Javier J<sup>1</sup>; López-Calahorra, Macarena<sup>2</sup>

<sup>1</sup> Granada Provincial Government. Department of the Environment. Periodista Barrios Talavera street, 1. E-18.014, Granada, Spain, jgarcia@dipgra.es. <sup>2</sup> Technical Assistance to compilation Sludge Plan in the province of Granada. Periodista Barrios Talavera street, 1. E-18.014, Granada, Spain. mlcalahorra@

## Abstract

It is expected that the number of small wastewater treatment plants increase markedly in Spain. Then the need to properly manage these infrastructures, usually located in rural areas, will come. This makes finding qualified personnel to be responsible for day to day of the treatment plants is difficult. Therefore to increase the supply of training activities aimed at this group is necessary because the supply is scarce today. The benefits of training are evident, both for businesses and workers. Aware of this situation, the Department of the Environment of the Government of Granada has developed a training plan for operators of small water treatment plants in the province of Granada. Several courses have been organized, operators have been formed insitu and manuals about treatment have been published. This training has reached almost 100% of the workers in the province and most of the technicians of the municipalities. It is difficult to quantify the effect of these training activities, but has been seen as the operators are more concerned with the proper functioning of the Waste Water Treatment Plants (WWTP). Therefore, it is necessary that the public Administration promotes this type of training.

Keywords: Wastewater treatment plant, small communities, management, training.

## Introduction

To comply with the regulations on water treatment (Directive 91/271/EEC) the number of sewage treatment plants in small towns will increase significantly in coming years (6.000 in Spain). In the case of the province of Granada is expected that there are 167 wastewater treatment plants (WWTPs) in operation, of which three quarters are less than than 2000 inhabitants.

On the one hand, the National Plan for Water Quality: Sewage and Treatment 2007–2015 (PNCA) emphasizes the urgent need to ensure management of the facility, because it is useless to build infrastructure if they are not operated and maintained properly. This is more complex in small towns because the waste water treatment has specific problems such as shortage of technical and financial resources.

Moreover, the PNCA provides that this problem can be approached from different perspectives: legal, technological and management. Management should pay attention to the training of workers.

But from the point of view of training there are aspects that characterize small treatment plants. Thus, the selected treatment for small communities must have a simple maintenance and operation (Salas Rodriguez JJ et al, 2007). Therefore these operators require minimal training to undertake their work safely and effectively. On the other hand, one might think that such training is a simple task, but in this type of water treatment plants are usually given circumstances that hinder this task:

- The water lines from these treatment plants are very different from each other.
- Most small treatment plants are located in a rural area where there are no qualified personnel.
- The staff at these treatment plants is limited. As there are more difficulties for an operator to new entrants can learn with a partner or is under the technical supervision of a training phase as would be desirable
  
- The staff at these treatment plants is limited. This is more difficult than a new operator can learn with a partner or under the technical supervision of a training phase as would be desirable.

The training has many benefits among which we highlight the following:

- Facilitate a change of attitude.
- Stimulates motivation.
- Increased self-confidence.
- Stimulate creativity.
- Decrease costs.
- Develops skills.
- Encourage contact between operators.
- Facilitate dialogue between the technicians and operators.

## Methods

After several years of experience in advising municipalities on wastewater treatment through the Programme of conservation and maintenance of wastewater treatment plants, the Department of the Environment of the Provincial Government of Granada has noted that one of the main problems in the management of sewage treatment plants of small populations is the lack of specialized training. Therefore, it has set up a training plan for operators of small sewage treatment plants based on three pillars:

1. Classroom training: where students assimilate the principles underlying the different systems for cleaning.

2. Training in the workplace, where workers put into practice the theoretical knowledge of the courses.
3. Manual operation of small sewage treatment plants: to see the questions that arise.

## Results and discussion

The training plan referred to, was materialized in the following activities:

- Three specialized courses on existing purification systems in the purification of small towns in the province:
  - Biofilm Systems, decanters-digesters, green filters and rapid infiltration.
  - Activated sludge systems.
  - Systems peat beds.



*Figure 1. Exhibition of equipment and classes*

The training was completed with an exhibition of various equipment and materials that can be found in the various facilities, as well as the projection of videos showing its operation.

The speakers who participated in the courses belonging to both the Department of the Environment of the Provincial de Granada and the company Acciona Agua. The participants were 181, among whom were operators, technicians and some councilors from 47 municipalities of Granada.

- The training offered in the classroom is put into practice in day to day so supervised treatment plants. On the one hand, the technicians of the Department of the Environment visited the wastewater treatment operators and explain the processes taking place in their facilities. In addition, the company contracted to perform preventive and corrective maintenance on-site training to operators of local councils in the implementation of such actions.
- To complement the two previous actions, technical Environment Delegation of the Delegation of Grenada have written several manuals of operation of the different WWTPs. On the other hand, the

same delegation published in cooperation with the firm Acciona Agua, a "Manual for Operators of Small Wastewater Treatment Stations."

## Conclusions

Training for operators of small wastewater treatment plants is necessary, although the purification systems in place for this type of purification is very simple. But against this strong demand has been to highlight the lack of existing offer such courses. Therefore, the training is to be encouraged by public administrations

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