

**TOWARDS A EUROPEAN QUALIFICATION FOR SOLID  
WASTE FACILITIES' MANAGERS**

**SWFM-QF PROJECT**

**NATIONAL REPORT  
ON NATIONAL VET SYSTEMS AND TRAINING  
PROGRAMMES FOR SOLID WASTE FACILITIES'  
PROFESSIONALS IN LITHUANIA**

**2013**

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# 1. INTRODUCTION

The report has been developed in the framework of international project SWFM-QF financed by the EU Leonardo da Vinci programme. The report presents results of a questionnaire-based survey conducted in 2003 in Lithuania by Alytus Region Waste Management Centre and the Institute of Environmental Engineering, Kaunas University of Technology. Three questionnaires have been used in the survey adapted for the following respondent groups:

- Waste management facilities;
- Organisations providing training for waste management facilities' managers and specialists; and
- Associations and authorities.

To collect information, approximately 200 e-mail messages have been sent to potential respondents in Lithuania. Mailing list of the survey covered most of organisations dealing with waste management in Lithuania. Questionnaires have been uploaded in the Internet to simplify the process of filling-in questionnaire hoping to increase response rate. Initial response rate was low. After reminding potential respondents by e-mail to fill-in questionnaires, phone calls have been made to most of potential respondents asking to participate in the survey. This activity enabled to achieve satisfactory response rate.

Total number of responses used in development of this report was 68. Number of waste management companies that actively participated in the survey was 39. Respondents represent the following waste management sectors (respondents could indicate more than one area):

- Waste collection – 27;
- Waste sorting - 20;
- Waste recycling - 11;
- Waste incineration – 0;
- Waste landfills – 11;
- Regional waste management (including administration) - 6.

Taking into account limited number of training institutions providing training in the area of waste management in Lithuania, 8 responses have been collected among these organisations. 2 respondents indicated that they represent organisation that provides registered training programme for waste management professionals, 6 respondents indicated representation of organisations providing informal/ unregistered training programmes that include topics legally required to be included in the training programmes for waste management professionals.

Respondents in the third category represented the following types of organisations (total number of responses – 21):

- National authority – 4;
- Regional authority – 5;
- Municipality – 9;
- Association – 1;
- Other (public institution) – 2.

The report has been developed by the Institute of Environmental Engineering, Kaunas University of Technology with assistance of the Alytus Region Waste Management Center.

## 2. OVERVIEW OF WASTE INDUSTRY VOCATIONAL TRAINING SYSTEM

A new system of requirements for qualification and training of waste facilities' specialists have been enacted on January 1st, 2013. The new system requires that activities of hazardous waste collection, transportation and treatment as well as landfill operation or waste incineration could be only performed by organisations, that have managers and technicians with appropriate qualifications, i.e. completed waste management training course established in accordance to requirements approved by the Minister of Environment of the Republic of Lithuania and received a certificate proving his (her) qualification to carry out waste management activities or supervise/organise waste management activities.

Until January 1st, 2013 special training and qualification certificates have only been requirements for specialists dealing with hazardous waste and their supervisors.

In accordance to the new waste management facilities' qualification and training requirement system, training organisation must be legal body; must have material and methodological resources necessary for training activities; must have internet website and personnel, sufficiently qualified to provide theoretical and practical training; and must have sufficient infrastructure necessary for training activities.

Organisation willing to register waste management qualification and training programme has to submit application to the Ministry of Environment. Applications are evaluated by a Commission for Qualification and Training lead by the following officials: Aleksandras Spruogis (Vice-minister of Environment, Chair of the Commission) and Vilma Karosienė (Director of the Waste Department at the Ministry of Environment, Deputy-chair of the Commission). Members of the Commission are 6 representatives of different departments of the Ministry of Environment related to waste management as well as Legal and Control department.

Training programmes that meet requirements of the waste management qualification and training system are approved by the Minister of Environment, based on recommendations of the Commission for Qualification and Training.

The new waste management facilities' qualification and training requirement system (further in the text – qualification and training requirement system) defines general and specific requirements for specialists of companies involved in collection, transportation, storage and treatment of hazardous waste; companies operating landfills or waste incinerators (including case when waste is a part of a fuel) as well as companies dealing with waste containing ozone depleting substances. The qualification and training requirement system also defines general requirements for qualification and training programmes. Finally, the requirement system defines procedure for evaluation, selection and approval of qualification and training programmes for waste management facilities' specialists. Participation in qualification and training programmes is compulsory for both managers and technicians.

It is required that waste management specialists (managers and technicians) have to improve their qualification at least every three years by participation in waste management qualification training programmes.

### **3. DESCRIPTION OF QUALITY ASSURANCE SYSTEM FOR VOCATIONAL WASTE MANAGEMENT TRAINING IN THE COUNTRY**

#### ***3.1. Requirements for training programmes/ institutions and duration of training programmes***

Qualification and training programmes for waste management specialists concerned in Lithuanian qualification and training requirement system are vocational training programmes.

Training organisation should ensure that qualification and training programme certain requirements and should submit an application, which includes programme description, topics covered, training plan, training facilities and training personnel, acquired knowledge evaluation and recommended training materials.

In the description of the contents of the training programme, the applicant should also present programme objective, certificate of qualification issued, and professional activities, that could be performed by the bearer of the certificate.

Topics of the training programme should be in line with the topics defined in the qualification and training requirement system.

Training plan has to be presented in the form of a table and present chronological sequence of the programme subjects/ modules, time allocated for particular modules (in hours), type of final exam/ test and time allocated for this final evaluation of acquired knowledge.

Qualification and training requirement system requires minimal conditions that should be met by training organisations in implementation of the training programme. The applicant should provide description of training facilities, including training equipment, methodological materials, training and visualisation equipment.

The applicant should also provide detailed information about training personnel, including education, professional qualification and work experience.

Duration of the training programmes depends on objectives of the training and qualification level of the trainees. For persons attending waste management training programme for the first time, it is recommended to provide training programmes not shorter than 3 days (24 academic hours). Otherwise, the training programmes should be not shorter than 2 days (16 academic hours).

The training programmes should take into account waste management legal requirements on both European Union and national level, including new developments of these requirements.

#### ***3.2. Topics required to be covered by training programmes***

Waste management qualification and training system requires training programmes to cover a specific set of subjects. For example, training programme for managers of landfills should cover the following subjects:

1. Legal requirements of the Republic of Lithuania and European Union related to waste management and landfill operations (including their construction and activities after landfill is closed);
2. Principles of waste prevention and waste management priorities (waste management hierarchy);
3. Principles of the procedure of the environmental impact assessment;
4. Principles of the procedure of issuing Integrated Pollution Prevention and Control (IPPC) permit and requirements for development of IPPC application;
5. Principles of waste classification in accordance to the official List of Waste;
6. Features of waste that determine this waste as a hazardous waste;
7. Requirements for landfill construction (including drainage system, gas collection system, top layer, etc.);
8. Criteria and procedures for waste admission to landfill;
9. Requirements for procedure closing of a landfill (requirements for drainage system, top layer, etc.);
10. Requirements for landfill filtrate, gas, and surface water monitoring;
11. Requirements for operation equipment for waste sorting, waste composting, mechanical-biological treatment;
12. Requirements for development of technical waste management documentation;
13. Principles of development of a waste management operation closing plan, requirements for particular measures and financing of these measures;
14. Procedure for registration in the Register for Waste Management Companies;
15. Requirements for accounting and reporting in waste generation and management;
16. Requirements for accounting and documentation of hazardous waste generation;
17. Requirements for waste accounting and other waste management document control;
18. Principles of landfill operation hygienisation;
19. Requirements for filling-in documents for transportation of hazardous waste;
20. Administrative responsibility for non-compliance to legal requirements in the area of waste management;
21. Principles of emergency preparedness and planning of preventive corrective actions to prevent accidents or to reduce impact from accidents.

Training programme for technicians of landfills should cover the following subjects:

1. Legal requirements of the Republic of Lithuania and European Union related to waste management and landfill operations (including their construction and activities after landfill is closed);
2. Requirements for landfill construction, operation, closing and activities after landfill is closed;
3. Principles of waste classification in accordance to the official List of Waste;
4. Features of waste that determine this waste as a hazardous waste;
5. Requirements for development of technical waste management documentation
6. Principles of the procedure of issuing Integrated Pollution Prevention and Control (IPPC) permit and requirements for development of IPPC application;
7. Criteria and procedures for waste admission to landfill;
8. Requirements for procedure closing of a landfill (requirements for drainage system, top layer, etc.)
9. Requirements for landfill filtrate, gas, and surface water monitoring;
10. Requirements for operation equipment for waste sorting, waste composting, mechanical-biological treatment;

11. Principles of waste prevention and waste management priorities (waste management hierarchy);
12. Principles of the procedure of the environmental impact assessment;
13. Procedure for registration in the Register for Waste Management Companies;
14. Principles of development of a waste management operation closing plan, requirements for particular measures and financing of these measures;
15. Requirements for accounting and reporting in waste generation and management;
16. Requirements for waste accounting and other waste management document control;
17. Principles of landfill operation hygienisation;
18. Requirements for filling-in documents for transportation of hazardous waste;
19. Administrative responsibility for non-compliance to legal requirements in the area of waste management;
20. Principles of emergency preparedness and planning of preventive corrective actions to prevent accidents or to reduce impact from accidents.

Similar requirements are also defined for waste management facilities dealing with hazardous waste, waste incineration and waste containing ozone depleting substances. General subjects are the same for all programmes; the only difference is in specific technical subjects.

It could be concluded that training programmes for managers and technicians in terms of subjects covered are generally the same. In principle, the difference is only in sequence in with different subjects are listed.

The survey questionnaire was developed using selected topics universal for different countries participating in the project SWFM-QF. Information about legal requirements concerning inclusion of these topics in the registered training programmes Lithuania is summarised in the table 1.

*Table 1. Selected subjects in legal requirements for registered training programmes in the area of waste management in Lithuania.*

No.	Subject	Yes/ No/ Partly required	
		Programmes for managers	Programmes for technicians
	National legal requirements concerning waste management	Yes	Yes
	EU legal requirements concerning waste management	Yes	Yes
	Waste management policy principles	Yes	Yes
	Environmental Impact Assessment principles	Yes	Yes
	Integrated Pollution Prevention and Control (IPPC) principles, including procedure for IPPC permits	Yes	Yes
	Principles of waste classification	Yes	Yes
	Properties that lead to waste classification as hazardous waste	Yes	Yes
	Technical requirements for equipment and technologies of waste management activity in concern	Yes	Yes

	State-of-the-art technologies in the area concerned	Partly covered	Partly covered
	National requirements for waste management procedures (licensing, waste accounting, reporting, etc.)	Yes	Yes
	Principles of emergency preparedness and planning of preventive corrective actions	Yes	Yes
	Monitoring requirements	Yes	Yes
	Sustainable development concept/ sustainable consumption and production principles	No	No
	Waste/ pollution prevention principles	Partly covered	Partly covered
	Product life cycle principles	No	No
	Principles of environmental management systems/ environmental risk assessment	No	No
	Principles of environmental management accounting	No	No
	Corporate social responsibility principles	No	No
	Principles of business/ corporate organisation and management	No	No

In terms of other topics, administrative responsibility for non-compliance to legal requirements in the area of waste management; could be mentioned as additional topic that was not covered in the survey questionnaires.

It could be concluded that most of the key subjects necessary for qualification of waste management managers and technicians are covered in the legal requirements for training programmes. However, coverage of the preventive/ sustainability/ environmental management/ product life cycle principles in legal requirements for training programmes is weak.

### ***3.3. Training structure elements under regulation***

Timing for different topics is not prescribed in the legal requirements for registered training programmes in the area of waste management in Lithuania. The list of subjects to be included in the training programmes for managers and technicians is slightly different, but there is no explicit requirement to conduct the training programme in this particular order.

In terms of timing for theory and practise, the legal requirement system for qualification and training of waste management specialists in Lithuania is flexible and allows training institutions to choose the best balance between theoretical and practical training.

The same applies to “delivering training in blocks” (e.g. everything at once, or with interval for home-tasks, etc.). The only requirement is for total number of academic hours. For persons attending waste management training programme for the first time, it is recommended to

provide training programmes not shorter than 3 days (24 academic hours). Otherwise, the training programmes should be not shorter than 2 days (16 academic hours).

### ***3.4. Overview of registered training programmes***

Currently, there is only one registered training programme in Lithuania (until January 1<sup>st</sup> 2013, there were 3 registered programmes). As Lithuanian market in waste management training is very small and requirements for training programme to get registered is high, it is unlikely that many training institutions will be willing to establish such programmes (high investment with little return). Perhaps, the key issue is to ensure that waste management facilities' managers and technicians have access to specific training courses tailored to their needs (informal training programmes). On-line training opportunities in the area of environmental management have not been explored in Lithuania yet.

Requirements for waste management qualification and training have changed on January 1<sup>st</sup> 2013. Until this date, certificates have been only required for hazardous waste management specialists. To date, number of issued certificates is 1166 (issued by 3 organisations that had registered training programmes until January 2013, data from the register of hazardous waste management database, [http://www.spsc.lt/cms/index.php?option=com\\_wrapper&view=wrapper&Itemid=297](http://www.spsc.lt/cms/index.php?option=com_wrapper&view=wrapper&Itemid=297)). The latest date when the last of the current certificates becomes invalid is January 24<sup>th</sup> 2015.

The only registered training programme in Lithuania is provided by Vilnius Gediminas Technical University.

## 4. AVAILABILITY OF EDUCATION PROGRAMMES FOR WASTE MANAGEMENT FACILITIES MANAGERS AND SPECIALISTS IN THE COUNTRY

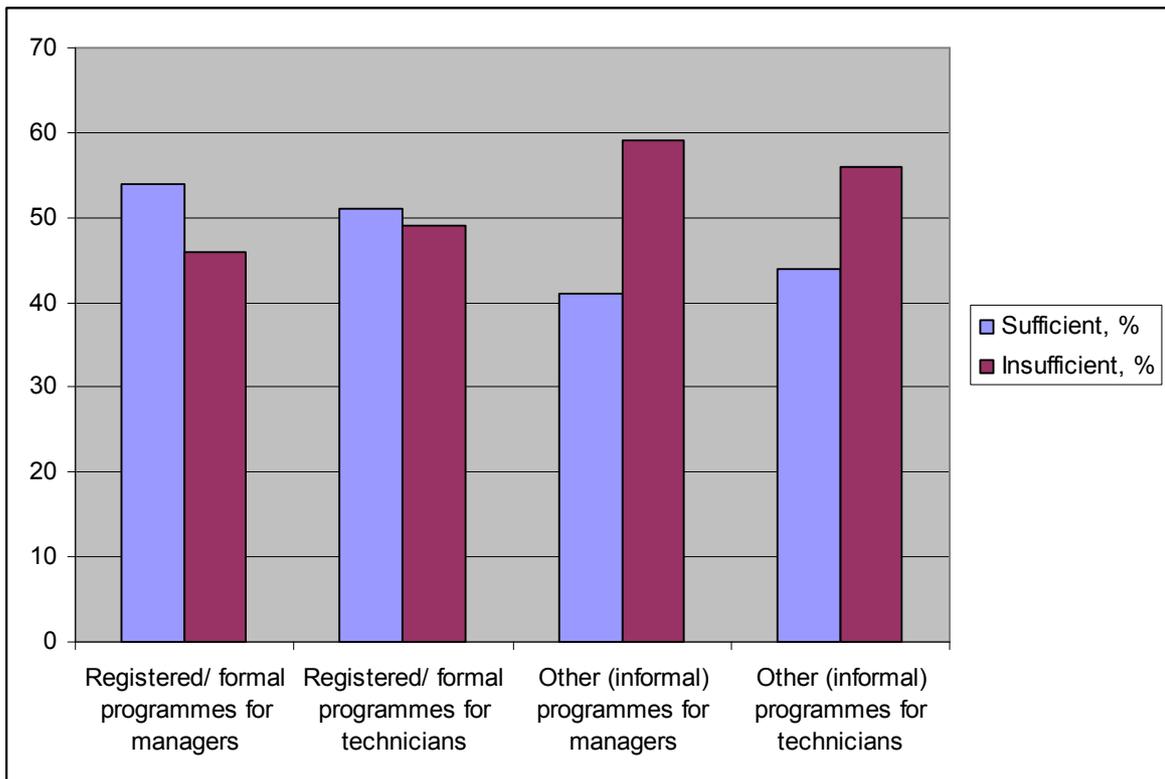
In addition to registered training programme for waste management specialists in Lithuania, several organisations provide training courses/ programmes in the area of waste management that could be of interest for waste management specialists. Some of these courses are organised on regular bases (e.g. education programmes at universities, particularly study programmes adapted to the needs of students that work full time in industry).

Opinion of waste management facilities' specialists concerning availability of registered (formal) and other (informal) training programmes is very dispersed. Results of the survey are presented in the table 2 and fig. 1. Approximately 50% of respondents believe that availability of both registered and informal programmes is sufficient. Other 50% of respondents have the opposite opinion.

In the opinions of the authors of this report, the survey results lead to a general conclusion that waste specialists in Lithuania can find necessary training programmes if they are willing to do so, but lack of information about these programmes is reflected in the opinion of those who believe that availability of such programmes is insufficient. This does not mean that number of training programmes is abundant and no more programmes are needed. In terms of registered training programmes, high number can hardly be expected due to very limited market. As to informal training programmes, there is a clear need for increase in number as well as scope.

*Table. 2. Opinion of waste management facilities' specialists on availability of training programmes in the area of waste management*

Type of programmes	Training programmes for managers	Training programmes for technicians
Registered/ formal programmes that end up with a document of qualification for participants	54% - Sufficient 46% - Insufficient	51% - Sufficient 49% - Insufficient
Other (informal) programmes that cover topics of interest for waste management facility managers and technicians	41% - Sufficient 59% - Insufficient	44% - Sufficient 56% - Insufficient



*Fig. 1. Availability of training programmes for waste management specialists*

On-line training programmes for waste management facilities' managers and specialists are not available in Lithuania. This are should be explored by training organisations that provide informal programmes, because in the current legal requirements, possibility to provide on-line registered training programmes is not foreseen.

## **5. COST AND POSSIBLE SOURCES OF FINANCING FOR PARTICIPATION IN TRAINING PROGRAMMES**

The cost for participation in the training programmes varies from 110 to 150 EUR/ person (the cost is the same for both managers and technicians). The costs could not be considered „too high“ as it is compatible with other management training programmes in the country. Nevertheless, it was mentioned by some survey respondents that costs for participants from some Lithuanian regions is too high because of additional costs (e.g. travel/ accommodation), because the training programmes are generally only available in Vilnius and Kaunas.

57% of training institutions indicated that participation costs are covered by facilities that send their employees for training. 43% indicated that participation costs are sometimes covered by various projects that include training activities in the area of waste management.

The cost for participating in the registered training programme is 100% covered by participating companies or participants themselves. In the registered training programme provided by the Vilnius Gediminas Technical University, waste management facilities have an option for discount in price in case they participate in the training for both facility managers and technicians.

In Lithuania, no subsidies are available for participation in waste management training.

## 6. COVERAGE OF SELECTED TOPICS IN THE TRAINING PROGRAMMES AVAILABLE IN LITHUANIA

Full data from the survey on the coverage of different topics in the training programmes available in Lithuania for waste management professionals is presented in the Table 3. Results of the survey are discussed further in this chapter for each particular topic. Taking into account that respondents generally consider that both programmes for waste facilities' managers and technicians have the same coverage of different topics, further analysis will be focused on individual topics without distinction between programmes for managers and technicians.

*Table 3. Coverage of different topics in the training programmes for waste management professionals in Lithuania.*

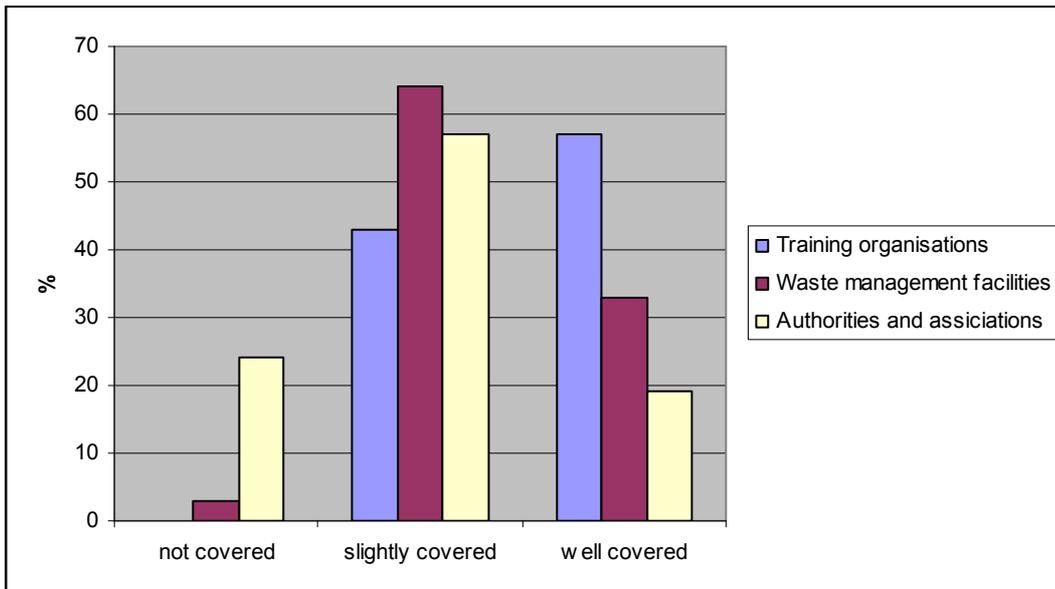
Topic	Opinion of training organisations		Opinion of Waste management facilities	Opinion of Authorities and Associations
	Programmes for managers	Programmes for technicians		
National legal requirements concerning waste management	0% - not covered 43% - slightly covered 57% - well covered	0% - not covered 43% - slightly covered 57% - well covered	3% not covered 64% slightly covered 33% well covered	24% - not covered 57% - slightly covered 19% - well covered
EU legal requirements concerning waste management	14% - not covered 29% - slightly covered 57% - well covered	14% - not covered 29% - slightly covered 57% - well covered	7% not covered 67% slightly covered 26% well covered	38% - not covered 53% - slightly covered 9% - well covered
Waste management policy principles	0% - not covered 29% - slightly covered 71% - well covered	0% - not covered 29% - slightly covered 71% - well covered	15% not covered 67% slightly covered 18% well covered	19% - not covered 71% - slightly covered 10% - well covered
Environmental Impact Assessment principles	43% - not covered 0% - slightly covered 57% - well covered	43% - not covered 0% - slightly covered 57% - well covered	12% not covered 76% slightly covered 10% well covered	19% - not covered 62% - slightly covered 19% - well covered
Integrated Pollution Prevention and Control (IPPC) principles, including procedure for IPPC permits	43% - not covered 0% - slightly covered 57% - well covered	43% - not covered 0% - slightly covered 57% - well covered	13% not covered 56% slightly covered 31% well covered	39% - not covered 52% - slightly covered 9% - well covered

Principles of waste classification	0% - not covered 43% - slightly covered 57% - well covered	0% - not covered 43% - slightly covered 57% - well covered	10% not covered 59% slightly covered 31% well covered	38% - not covered 43% - slightly covered 19% - well covered
Technical requirements for equipment and technologies of waste management facility/ activity in concern	29% - not covered 14% - slightly covered 57% - well covered	29% - not covered 14% - slightly covered 57% - well covered	20% not covered 67% slightly covered 13% well covered	29% - not covered 62% - slightly covered 9% - well covered
State-of-the-art technologies in the area concerned	29% - not covered 14% - slightly covered 57% - well covered	29% - not covered 14% - slightly covered 57% - well covered	23% not covered 59% slightly covered 18% well covered	43% - not covered 52% - slightly covered 5% - well covered
National requirements for waste management procedures (licensing, waste accounting, reporting, etc.)	42% - not covered 29% - slightly covered 29% - well covered	42% - not covered 29% - slightly covered 29% - well covered	18% not covered 54% slightly covered 28% well covered	34% - not covered 57% - slightly covered 9% - well covered
Principles of emergency planning and response measures	42% - not covered 29% - slightly covered 29% - well covered	42% - not covered 29% - slightly covered 29% - well covered	16% not covered 72% slightly covered 12% well covered	47% - not covered 44% - slightly covered 9% - well covered
Monitoring requirements	72% - not covered 0% - slightly covered 29% - well covered	72% - not covered 14% - slightly covered 14% - well covered	23% not covered 69% slightly covered 8% well covered	34% - not covered 57% - slightly covered 9% - well covered
Waste/ pollution prevention principles	44% - not covered 28% - slightly covered 28% - well covered	44% - not covered 28% - slightly covered 28% - well covered	18% not covered 69% slightly covered 13% well covered	30% - not covered 71% - slightly covered 9% - well covered
Product life cycle principles	57% - not covered 28% - slightly covered 15% - well covered	70% - not covered 15% - slightly covered 15% - well covered	44% not covered 56% slightly covered 0% well covered	47% - not covered 47% - slightly covered 6% - well covered

Principles of environmental management system/ environmental risk management	44% - not covered 28% - slightly covered 28% - well covered	57% - not covered 15% - slightly covered 28% - well covered	18% not covered 79% slightly covered 3% well covered	57% - not covered 38% - slightly covered 5% - well covered
Principles of environmental management accounting	44% - not covered 28% - slightly covered 28% - well covered	57% - not covered 15% - slightly covered 28% - well covered	24% not covered 72% slightly covered 4% well covered	62% - not covered 38% - slightly covered 0% - well covered
Corporate social responsibility principles	44% - not covered 28% - slightly covered 28% - well covered	72% - not covered 0% - slightly covered 28% - well covered	30% not covered 55% slightly covered 15% well covered	57% - not covered 43% - slightly covered 0% - well covered
Health & Safety practices	71% - not covered 29% - slightly covered 0% - well covered	71% - not covered 29% - slightly covered 0% - well covered	6% - not covered 74% - slightly covered 20% - well covered	28% - not covered 44% - slightly covered 28% - well covered
Principles of business/ corporate organisation and management	57% - not covered 43% - slightly covered 0% - well covered	57% - not covered 43% - slightly covered 0% - well covered	28% not covered 59% slightly covered 13% well covered	19% - not covered 71% - slightly covered 10% - well covered

### **6.1. National legal requirements concerning waste management**

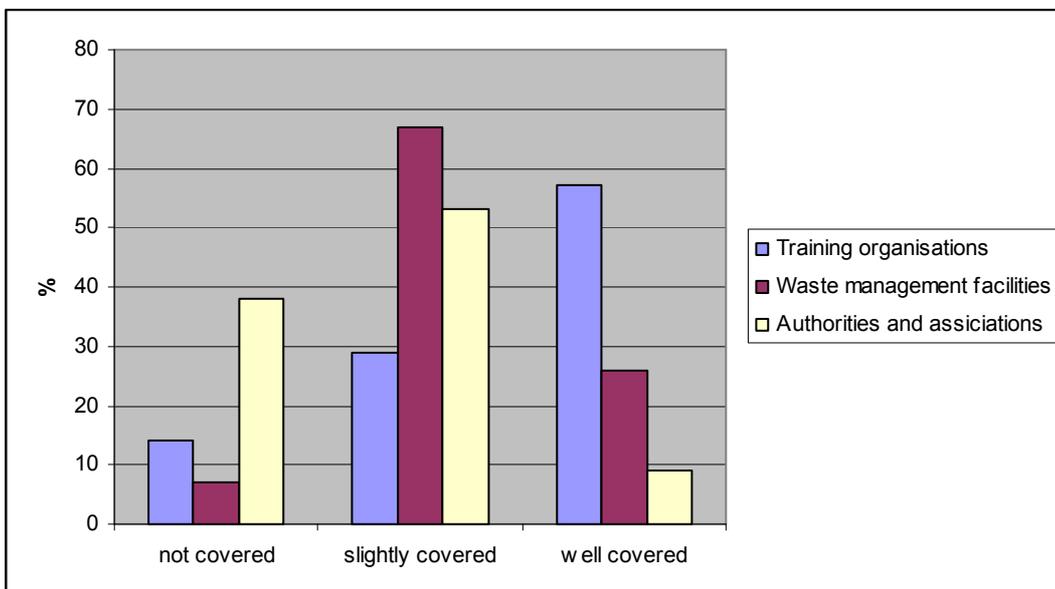
High percentage of respondents representing waste management facilities and authorities/ associations believe that topic of national legal requirements is only slightly covered, while almost 60% of respondents from training institution tend to consider that this topic is well covered (Fig. 2). The topic of national legal requirements has been identified as the most important by the respondents from waste management facilities (72% of respondents indicated that in their opinion importance of this topic is high). This issue should be considered when updating existing/ developing new training programmes for waste management professionals, even if majority of respondents from training organisations believe that this topic is already well covered. The improvement options could include revision of training methods to ensure that the topic is better understood by trainees.



*Fig. 2. Coverage of national legal requirements concerning waste management in the training programmes for waste management professionals*

## **6.2. EU legal requirements concerning waste management**

As in case of national legal requirements, representatives of waste management facilities and authorities/ associations believe that topic of national legal requirements is not sufficiently covered, while almost 60% of respondents from training institution tend to consider that this topic is well covered (Fig. 3).



*Fig. 3. Coverage of EU legal requirements concerning waste management in the training programmes for waste management professionals*

### 6.3. Waste management policy principles

In opinion of training organisations, the topic of waste management policy principles is well covered (more than 71% of respondents), but only 10% of respondents representing authorities and association and less than 20% of waste facilities' professionals have the same opinion and believe that this topic is only partly covered (Fig. 4).

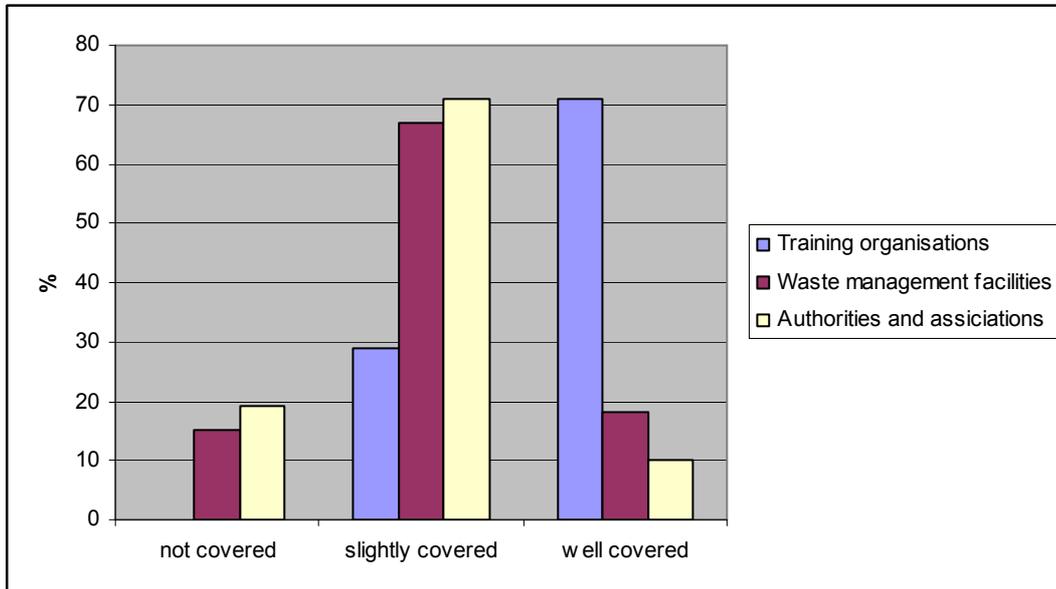


Fig. 4. Coverage of waste management policy principles in the training programmes for waste management professionals

### 6.4. Environmental Impact Assessment principles

Opinion of training organisations on the coverage of environmental impact assessment principles is drastically split. The opinion that this topic is well covered is shared by representatives of training institutions providing registered training programmes (this topic is legally required) and supported by some representatives of other training organisations. Nevertheless, most of waste management facilities' professionals and authorities/ believe that this topic is only slightly covered (Fig. 5).

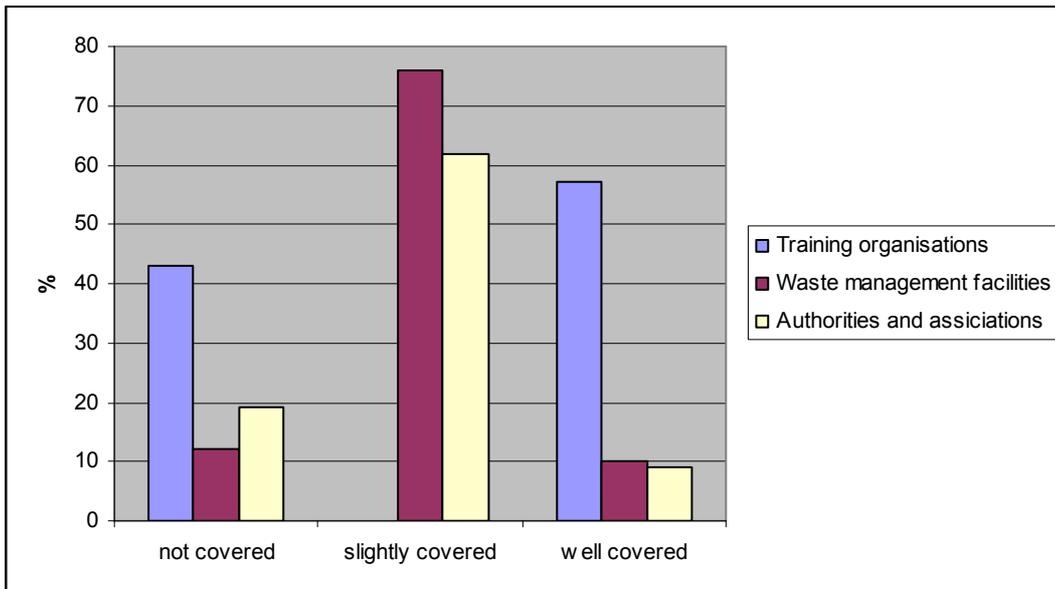
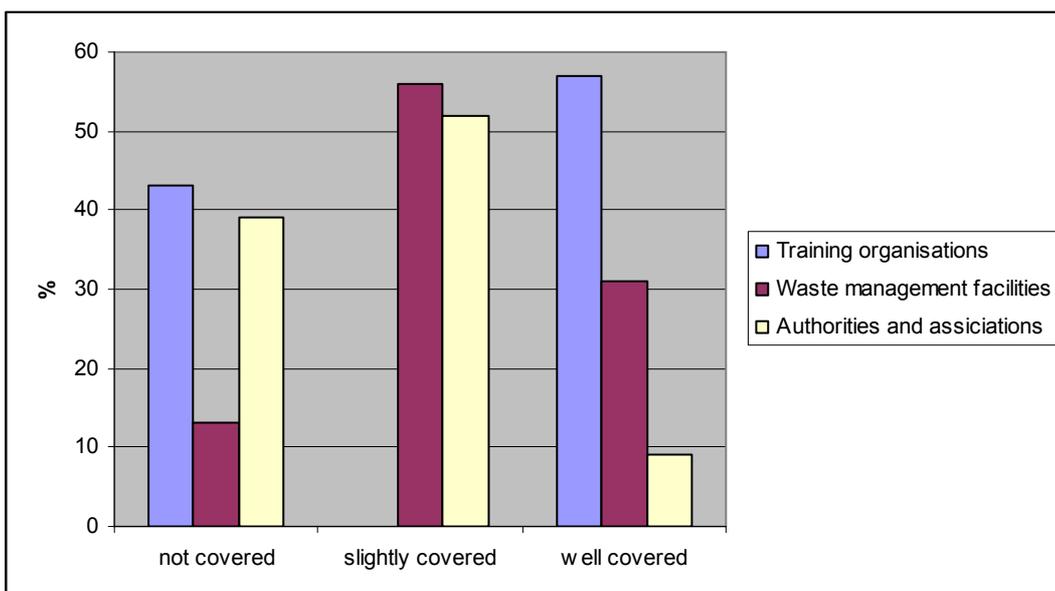


Fig. 5. Coverage of Environmental Impact Assessment principles in the training programmes for waste management professionals

### 6.5. Integrated Pollution Prevention and Control (IPPC) principles, including procedure for IPPC permits

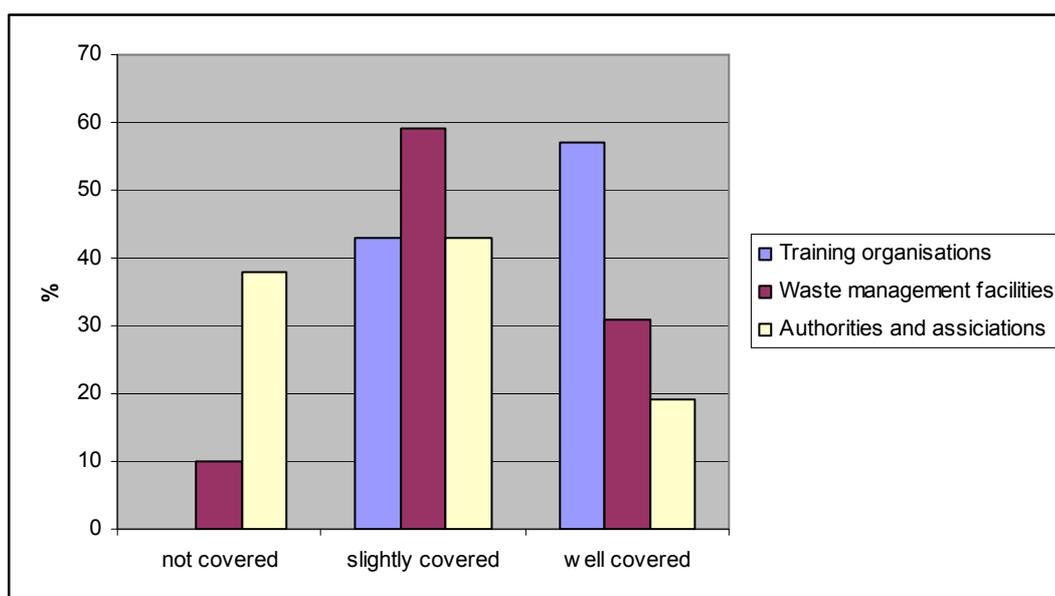
As in case of coverage of environmental impact assessment topic, opinion of the training organisations on coverage of Integrated Pollution Prevention and Control topic is split: 40% of respondents indicated that this topic is not covered and 60% of respondents indicated that this topic is well covered (Fig. 6). This topic was evaluated by waste management facilities as third most important topic in the training programmes (59% of respondents from waste management facilities). Currently, only 1/3 of respondents from waste management facilities believe that this topic is well covered in the training programmes.



*Fig. 6. Coverage of IPPC principles in the training programmes for waste management professionals*

### **6.6. Principles of waste classification**

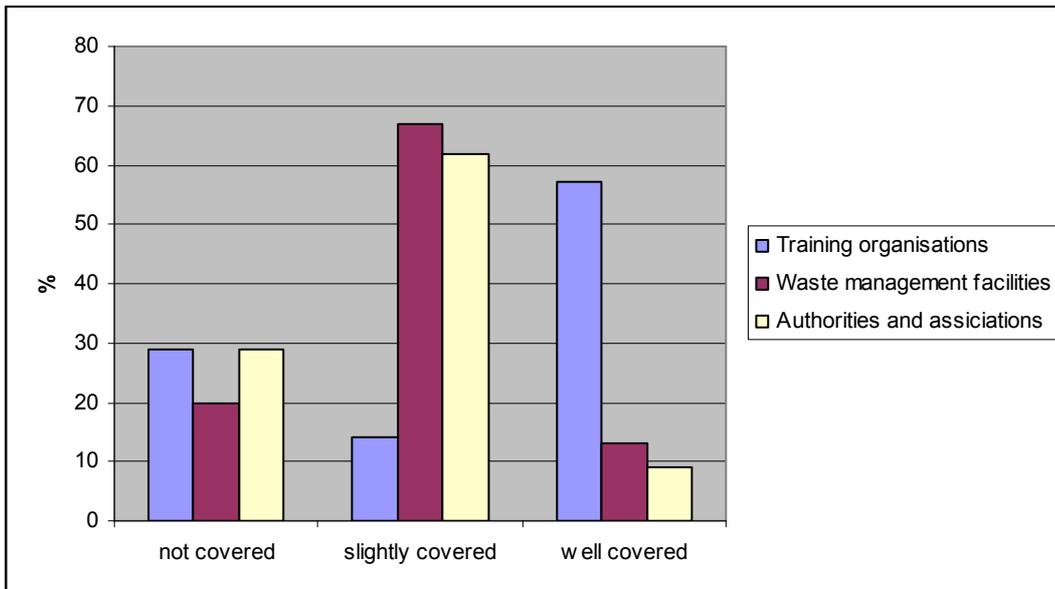
As in case with all other previously discussed topics, majority of training organisations' representatives believe that principles of waste classification are well covered in the training programmes for waste management professionals. Representatives of waste management facilities and authorities/ associations believe that coverage of this topic could be improved. However in this case, more than 40% of respondents from training institutions also have the same opinion (Fig. 7).



*Fig. 7. Coverage of waste classification principles in the training programmes for waste management professionals*

### **6.7. Technical requirements for equipment and technologies of waste management facility / activity in concern**

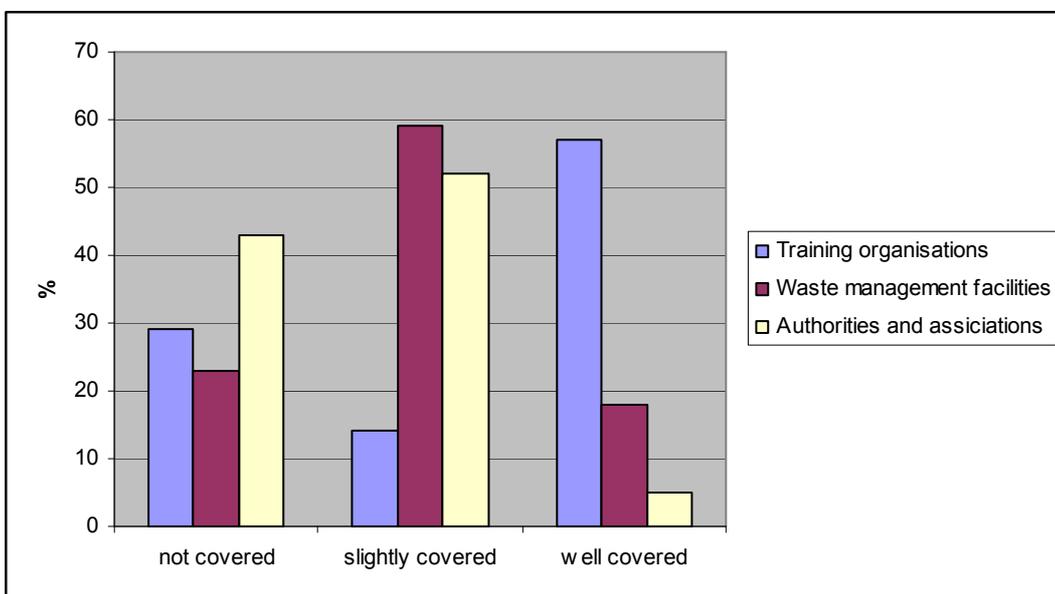
In terms of technical requirements for equipment and technologies of waste management facilities, opinions of training organisations and other organisations that participated in the survey is totally different. Almost 60% of training institutions indicated that this topic is well covered, while this view is shared by approximately 10% of other respondents (Fig. 8).



*Fig. 8. Coverage of technical requirements for equipment and technologies in the training programmes for waste management professionals*

### **6.8. State-of-the-art technologies in the area concerned**

Opinions of the survey participants on the coverage of state-of-the-art technologies in the training programmes for waste management facilities' professionals are almost identical to opinions of the coverage of technical requirements for equipment and technologies (Fig. 9).



*Fig. 9. Coverage of state-of-the-art technologies in the training programmes for waste management professionals*

## 6.9. National requirements for waste management procedures (licensing, waste accounting, reporting, etc.)

As to coverage of national requirements for waste management procedures, differences in opinions of different organisations are not so big. 29% of respondents from training organisations and 28% of respondents from waste management facilities indicated that this topic is well covered. 42% of respondents admitted that this programme is not covered in the training programmes (Fig. 10). According to the survey results, this topic is considered of high importance by 64% of respondents from waste management facilities. This should be considered when updating/ developing training programmes for waste management professionals.

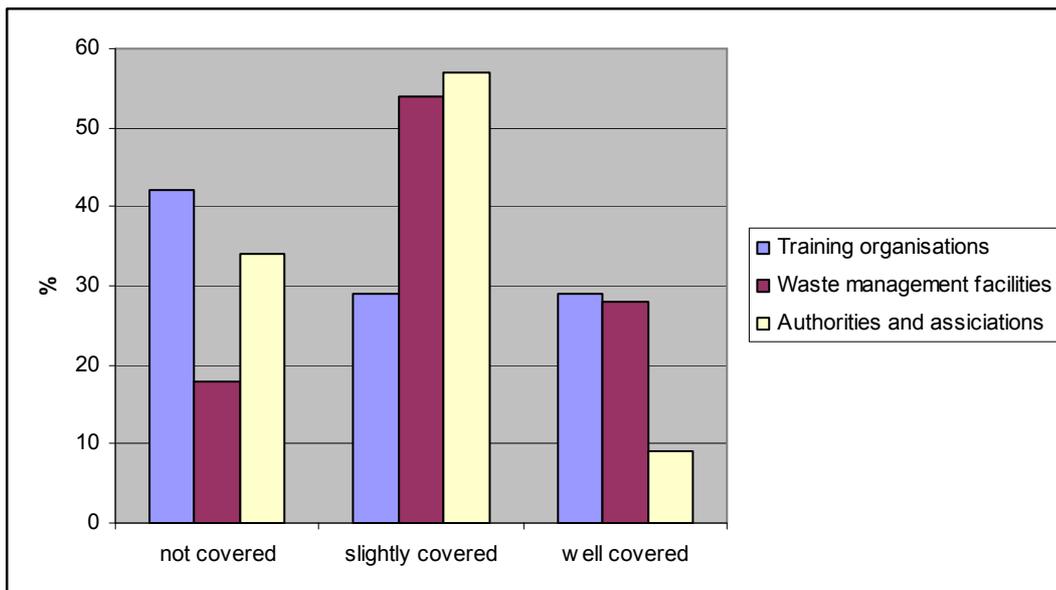


Fig. 10. Coverage of national requirements for waste management procedures the training programmes for waste management professionals

## 6.10. Principles of emergency planning and response measures

Majority of respondents from waste management facilities indicated that principles of emergency planning and response measures are slightly covered in existing training programmes. Percentage of responses from training organisations: 29% of respondents indicated that this topic is well covered, 29% - slightly covered in training programmes for both managers and technicians, 42% - not covered (Fig. 11).

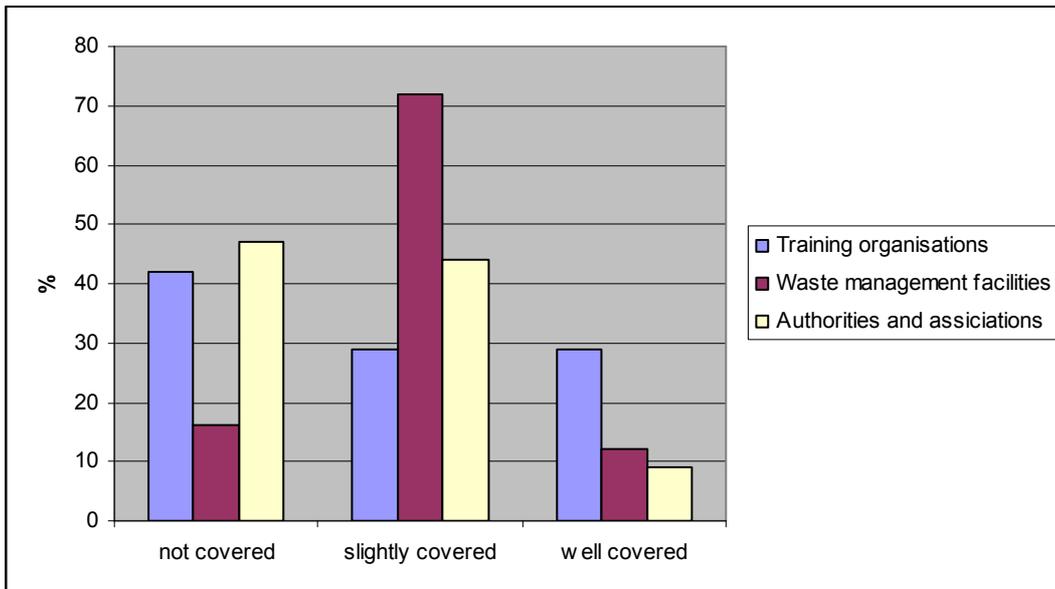


Fig. 11. Coverage of principles of emergency planning and response measures in the training programmes for waste management professionals

### 6.11. Monitoring requirements

More than 70% of respondents from training organisations indicated that monitoring requirements are not covered in the training programmes, while 29% of respondents indicated that this topic is well covered. At the same time, most of waste management facilities and authorities/ associations believe that this topic is slightly covered (Fig. 12).

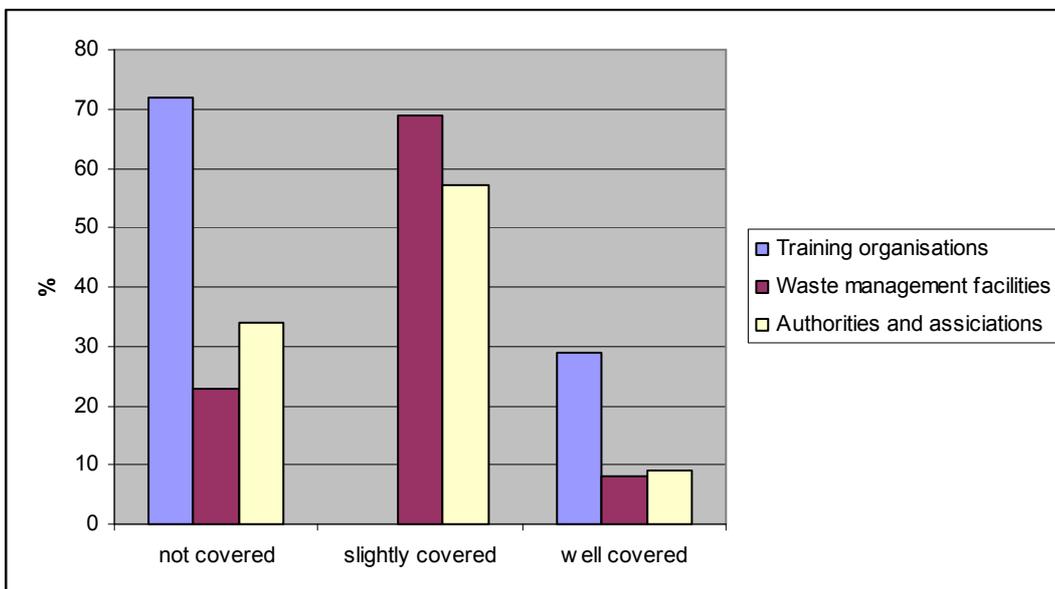


Fig. 12. Coverage of monitoring requirements in the training programmes for waste management professionals

### 6.12. Waste/ pollution prevention principles

Majority of respondents indicated that waste/ pollution prevention principles are slightly or not covered in the training programmes. However, almost 1/3 of respondents from training organisations indicated that their programmes sufficiently reflect pollution prevention principles (Fig. 13).

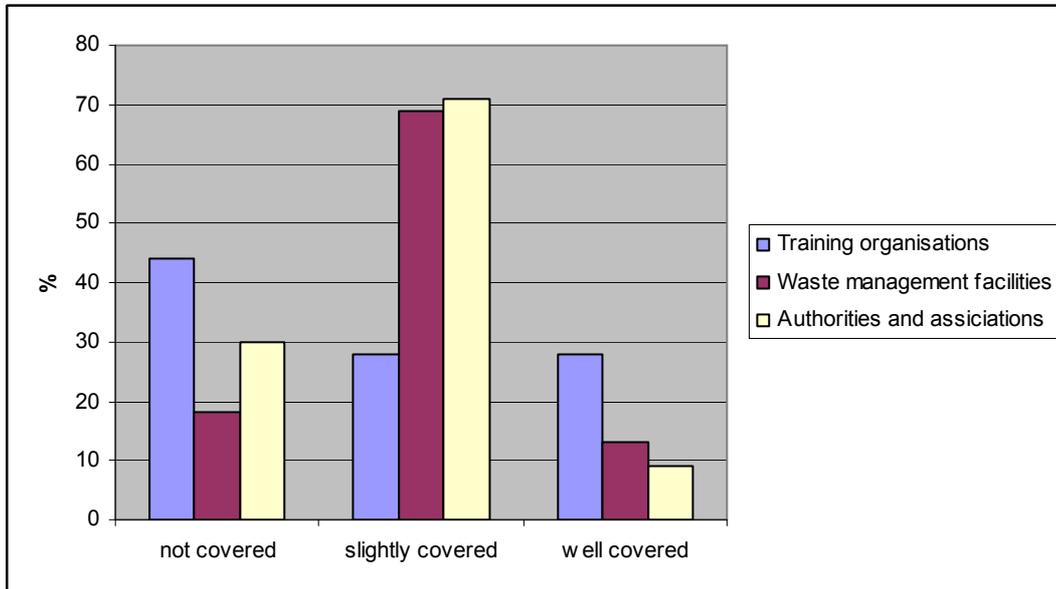


Fig. 13. Coverage of waste/ pollution prevention principles in the training programmes for waste management professionals

### 6.13. Product life cycle principles

As to product life-cycle principles, it is a general consensus among respondents of the survey that these principles are not covered or slightly covered in the training programmes for waste management facilities' professionals (Fig. 14).

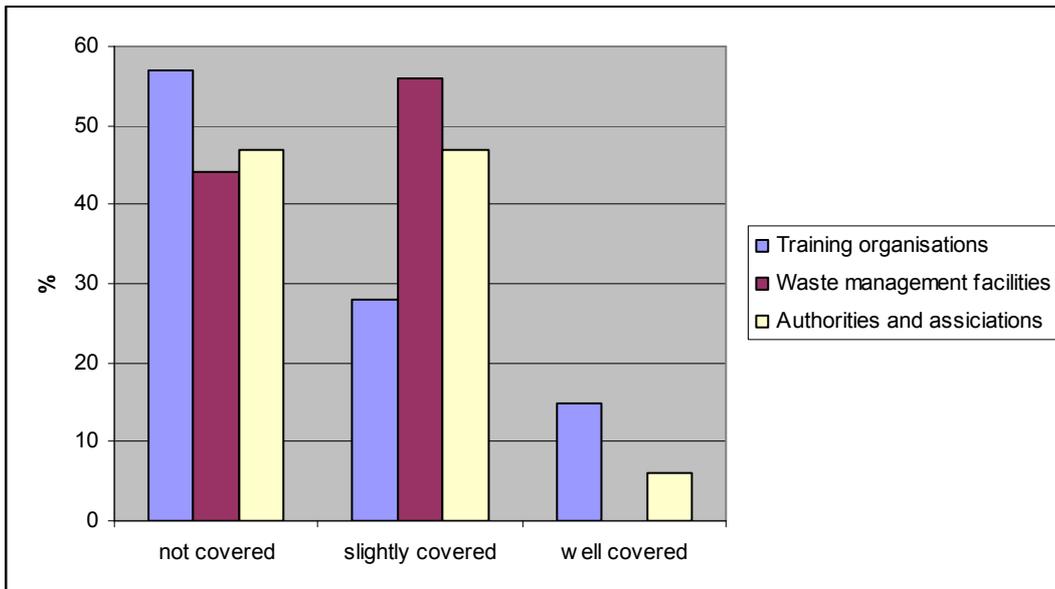


Fig. 14. Coverage of product life cycle principles in the training programmes for waste management professionals

#### 6.14. Principles of environmental management system/ environmental risk management

Majority of respondents indicated that principles of environmental management systems/ environmental risk management are slightly or not included in the existing training programmes (Fig. 15).

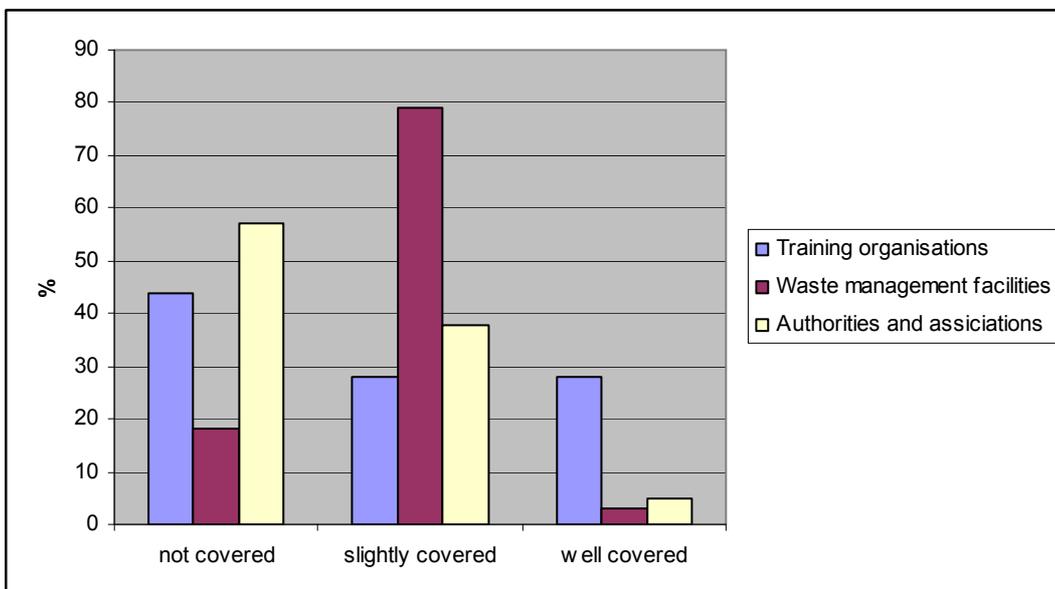


Fig. 15. Coverage of environmental management principles in the training programmes for waste management professionals

### 6.15. Principles of environmental management accounting

Coverage of environmental management accounting principles is almost identical to coverage of environmental management principles (Fig. 16).

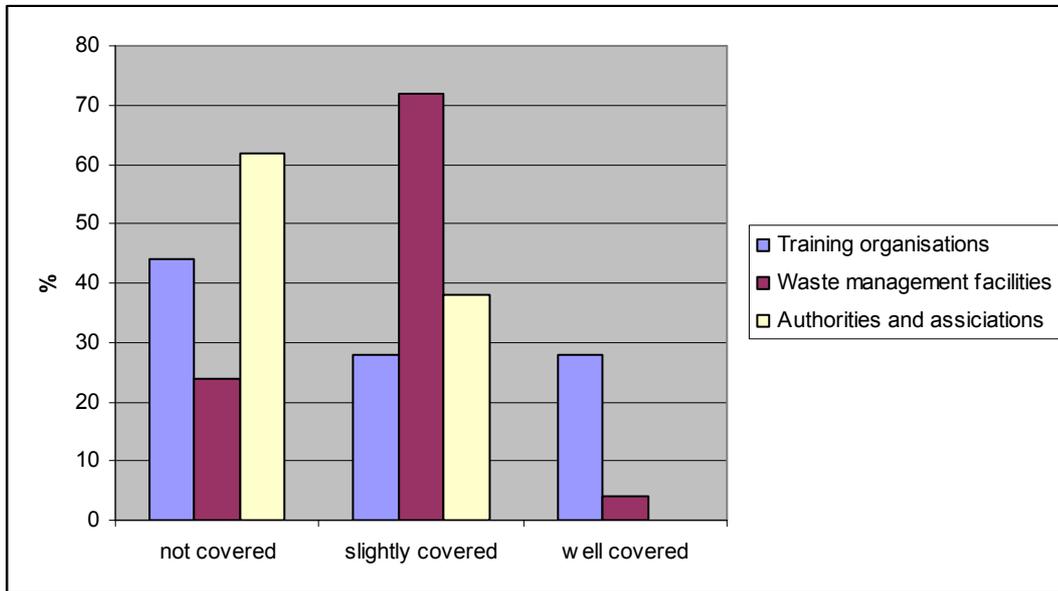


Fig. 16. Coverage of environmental management accounting principles in the training programmes for waste management professionals

### 6.16. Corporate social responsibility principles

There is general consensus among survey respondents that corporate social responsibility principles are not covered or slightly covered in the existing training programmes (Fig. 17).

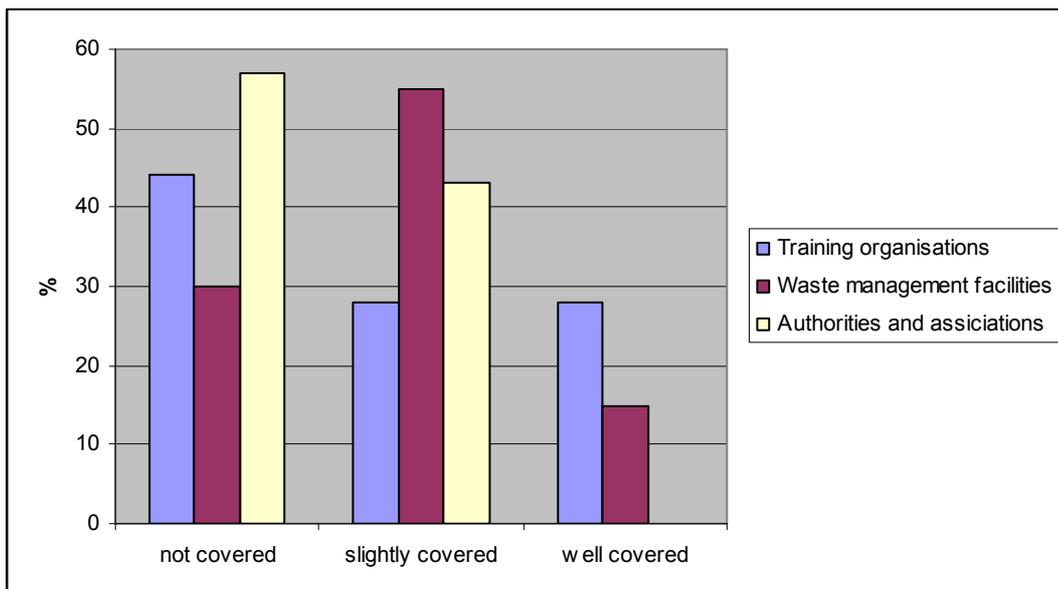


Fig. 17. Coverage of corporate social responsibility principles in the training programmes for waste management professionals

### 6.17. Health and Safety practices

While 71% of training organisations indicated that health and safety issues are not included in the existing training programmes, majority of respondents from waste management facilities and authorities/ associations indicated that this topic is slightly covered (Fig. 18).

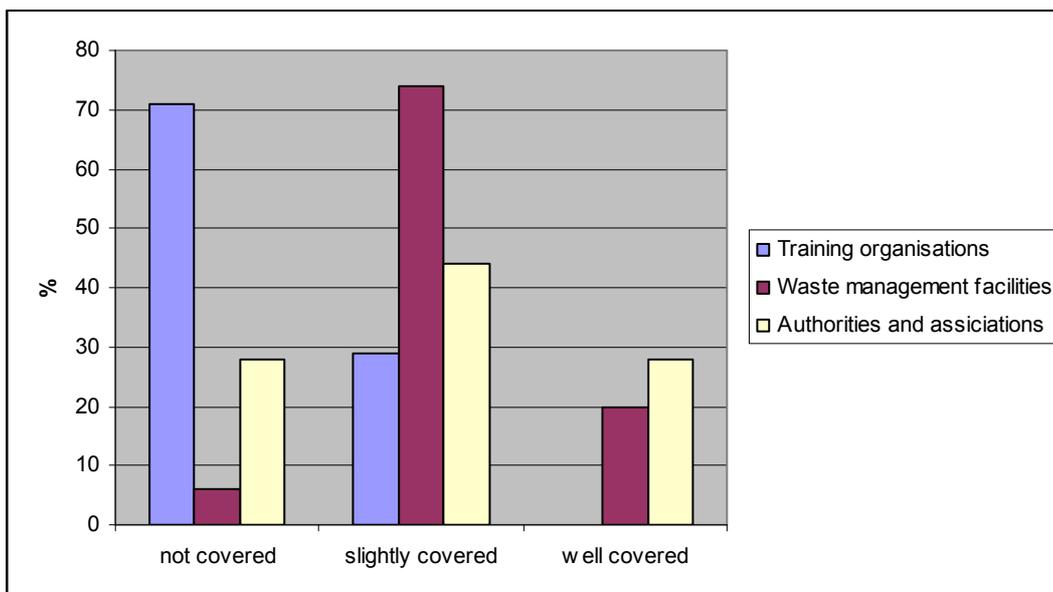
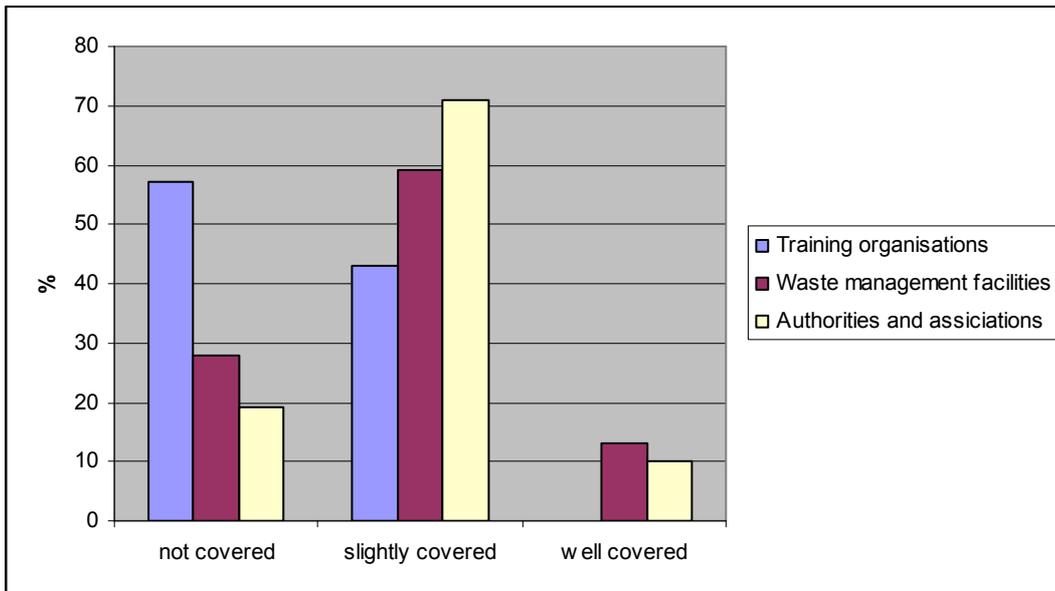


Fig. 18. Coverage of health and safety practices in the training programmes for waste management professionals

### 6.18. Principles of business/ corporate organisation and management

There is general consensus among survey respondents that principles of business/ corporate organisation and management are slightly/ not covered in the existing training programmes (Fig. 19).



*Fig. 19. Coverage of principles of business/ corporate organisation and management in the training programmes for waste management professionals*

## 7. EVALUATION OF QUALITY OF THE TRAINING PROGRAMMES FOR WASTE MANAGEMENT MANAGERS AND TECHNICIANS AVAILABLE IN THE COUNTRY

### 7.1. Scope/ contents

In terms of scope/ contents of the existing training programmes for waste management facilities' professionals, majority of the respondents indicated that the quality of the training programmes is medium (Table 4 and Fig. 20). This view is shared by all type of organisations that participated in the survey (86% - training organisations, 64% - waste management facilities, 67% - authorities and associations).

Table 4. Opinions of different organizations concerning scope/ contents of existing training programmes for waste management facilities' professionals

Quality of the programme	Training institutions	Waste Management facilities	Authorities and associations
Low	0%	13%	14%
Medium	86%	64%	67%
High	14%	23%	19%

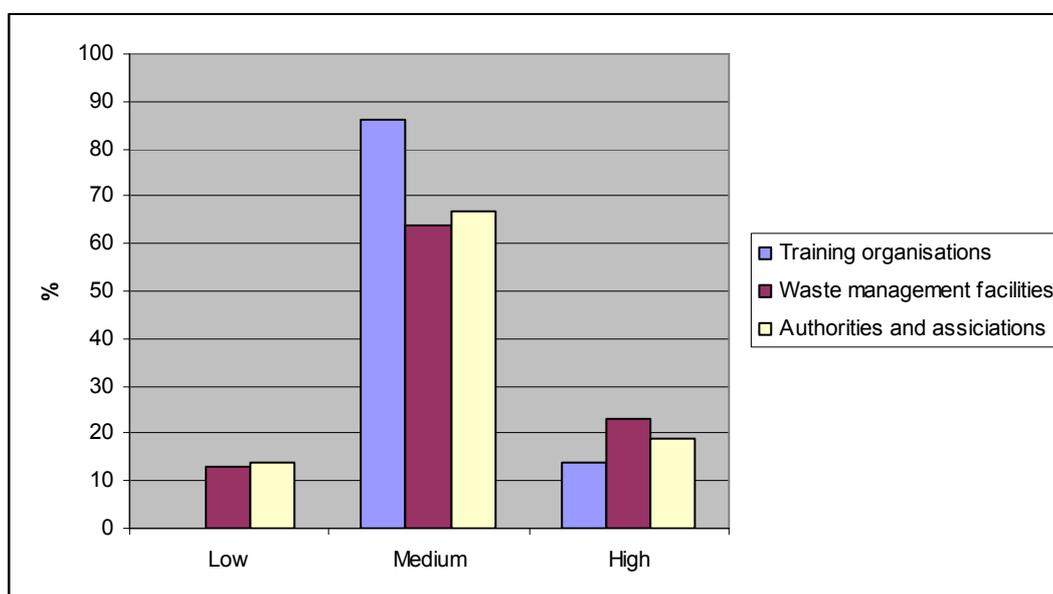


Fig. 20. Opinions of different organisations concerning scope/ contents of existing training programmes

## 7.2. Integration of theoretical and practical training

Training organisations that participated in the survey indicated that the ratio between theoretical lectures and practical exercises is approximately 75/ 25. Quantitative results of the survey on integration of technical and practical training is summarised in the table 5.

Table 5. Opinions of different organisations on integration of theoretical and practical training in existing training programmes for waste management professionals

Quality of the programme	Training institutions	Waste Management facilities	Authorities and associations
Low	0%	18%	19%
Medium	43%	69%	67%
High	57%	13%	14%

Majority of respondents from training institutions (almost 60%) believe that integration of theoretical and practical training is high. However, most of respondents from waste management facilities and authorities/ associations believe that this integration is only medium (almost 70% of respondents believe that improvements in this area could be made) (Fig. 21).

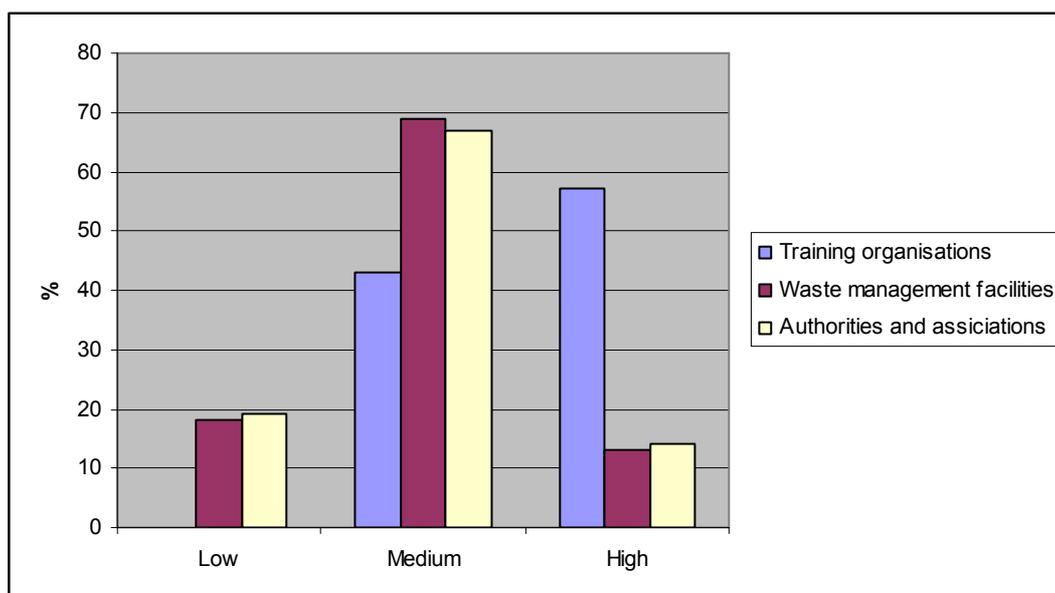


Fig. 21. Opinions of different organisations on integration of theoretical and practical training in existing training programmes

## 7.3. Quality of training materials

While 100% of training institutions that participated in the survey are satisfied with the quality of training materials, most of respondents from waste management facilities and authorities/ associations believe that quality of training materials could be improved (Table 6 Fig. 22).

Table 6. Opinions of different organizations concerning quality of training materials in existing training programmes for waste management facilities' professionals

Quality of the programme	Training institutions	Waste Management facilities	Authorities and associations
Low	0%	10%	19%
Medium	0%	64%	67%
High	100%	26%	14%

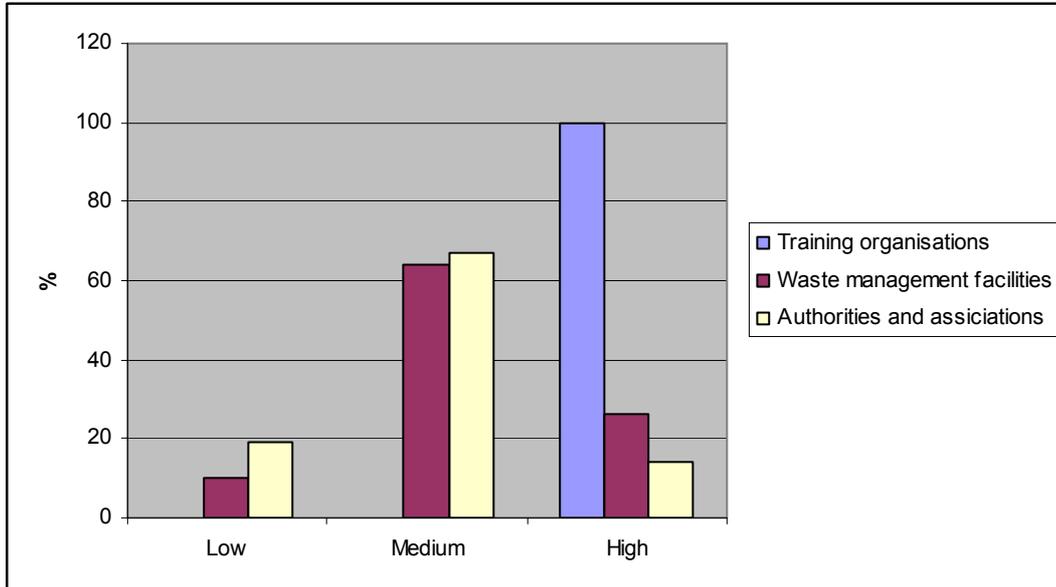


Fig. 22. Opinions of different organizations concerning quality of training materials in existing training programmes

#### 7.4. Qualification of trainers

86% of training organisations believe that qualification of trainers in existing training programmes for both managers and technicians is high. This opinion is shared by 1/3 of respondents from waste management facilities and authorities/ associations (Table 7 and Fig. 23).

Table 7. Opinions of different organizations concerning qualification of trainers in existing training programmes for waste management facilities' professionals

Quality of the programme	Training institutions	Waste Management facilities	Authorities and associations
Low	0%	5%	10%
Medium	14%	59%	57%
High	86%	36%	33%

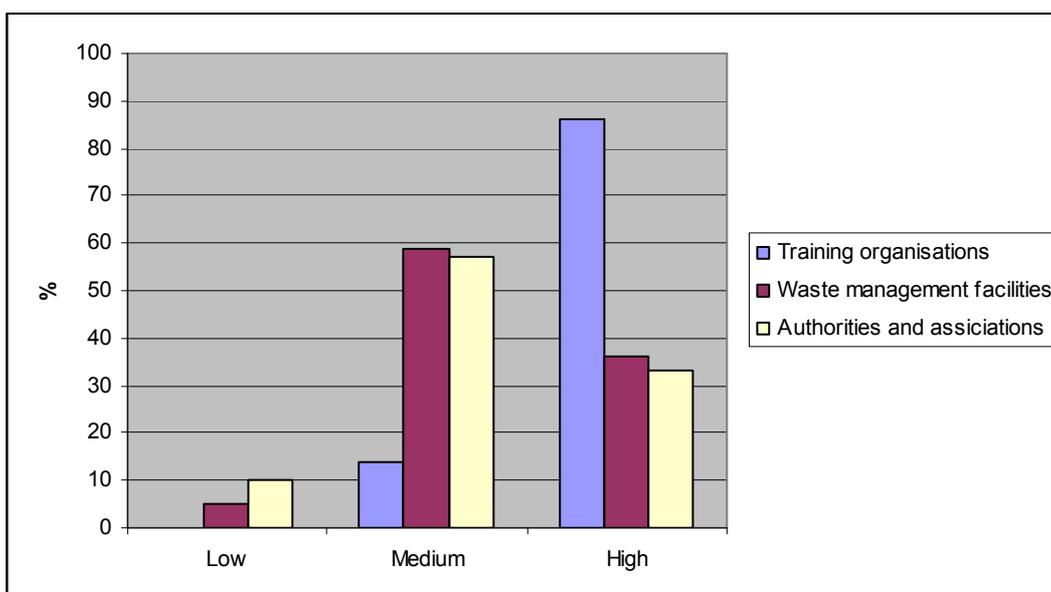


Fig. 23. Opinions of different organizations concerning qualification of trainers in existing training programmes

### 7.5. Training facilities

71% of training organisations believe that quality of training facilities is high, 29% - medium. Most of respondents from waste management facilities and authorities/ associations believe that quality of training facilities is medium (Table 8 and Fig. 24).

Table 8. Opinions of different organizations concerning training facilities of existing training programmes for waste management facilities' professionals

Quality of the programme	Training institutions	Waste Management facilities	Authorities and associations
Low	0%	15%	14%
Medium	29%	67%	67%
High	71%	18%	19%

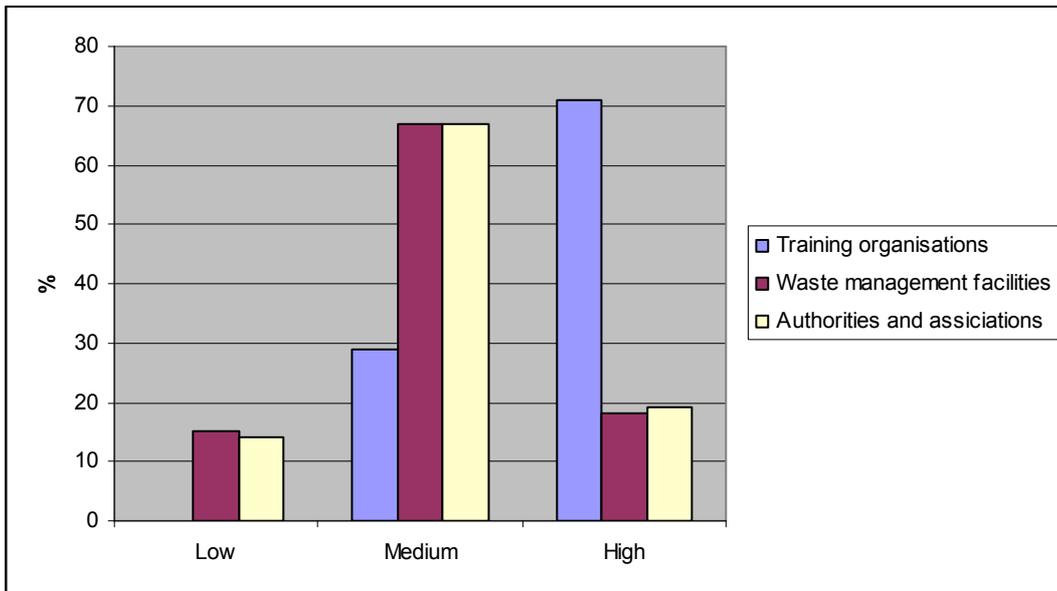


Fig. 24. *Opinions of different organizations concerning training facilities of existing training programmes*

## 8. OVERVIEW OF LEARNING OUTCOMES AND ACQUIRED KNOWLEDGE

Quantitative data from the survey on learning outcomes and acquired knowledge is summarised in the table 9.

*Table 9. Overview of learning outcomes and acquired knowledge.*

Topic	Training organisations		Waste management facilities	Authorities and Associations
	Programmes for managers	Programmes for technicians		
Waste management procedures in the area concerned	15% low 15% medium 70% high	15% low 15% medium 70% high	8% low 79% medium 13% high	43% low 52% medium 5% high
Environmental management procedures	28% low 57% medium 15% high	14% low 43% medium 14% high	13% low 82% medium 5% high	48% low 52% medium 0% high
Health and safety procedures	71% low 29% medium 0% high	71% low 29% medium 0% high	6% low 74% medium 20% high	28% low 44% medium 28% high
Waste minimisation methodology	44% low 28% medium 28% high	57% low 15% medium 28% high	23% low 67% medium 10% high	26% low 48% medium 26% high
Life cycle assessment methodology	44% low 28% medium 28% high	57% low 15% medium 28% high	43% low 54% medium 3% high	19% low 43% medium 38% high
Environmental Impact Assessment methodology	43% low 14% medium 43% high	44% low 28% medium 28% high	31% low 64% medium 5% high	38% low 43% medium 19% high
Development of IPPC permit application	43% low 0% medium 57% high	43% low 0% medium 57% high	10% low 69% medium 21% high	33% low 48% medium 19% high

### **8.1. Waste management procedures in the area concerned**

71% of training organisations indicated that practical skills in waste management procedures are acquired at high level. Majority of respondents from waste management facilities and authorities/ associations do not share this opinion and believe that situation could be improved (Fig. 25).

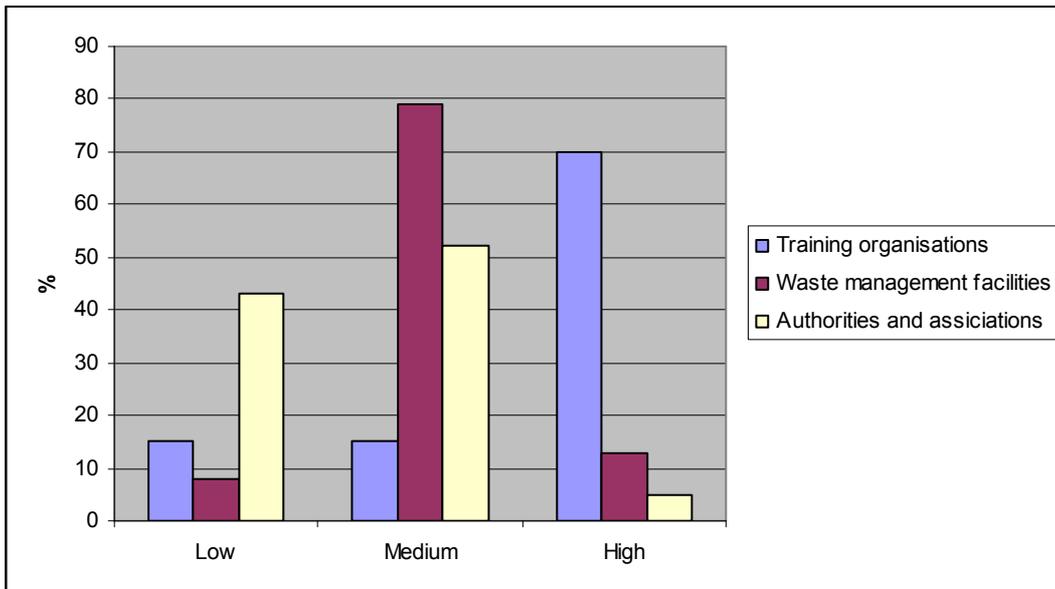


Fig. 25. Opinions of different organisations concerning waste management procedures

## 8.2. Environmental management procedures

There is general consensus among respondents from all types of organisations that practical skills in this area are acquired at medium level (Fig. 26)

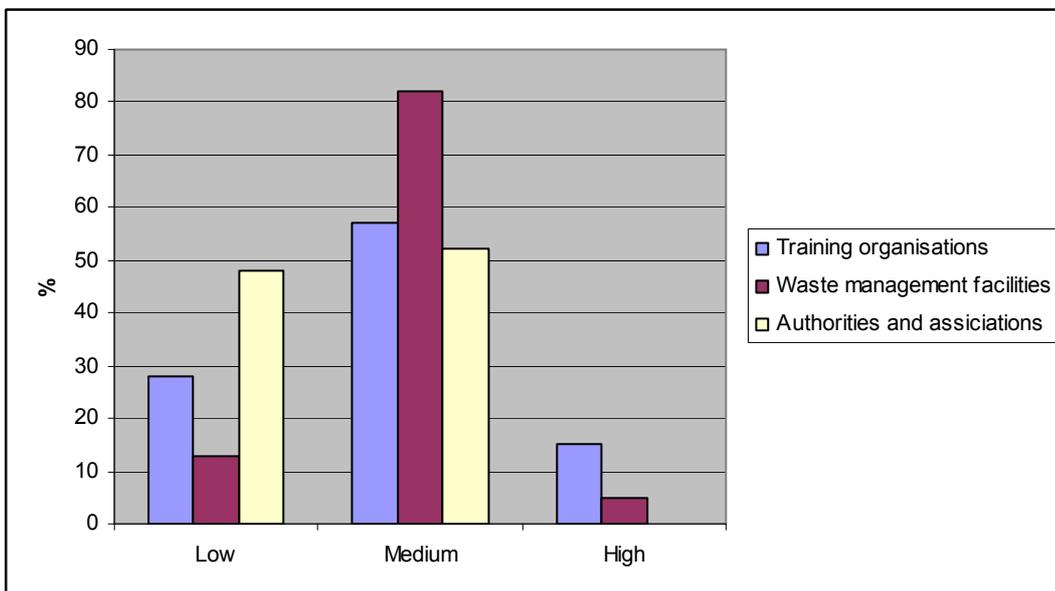


Fig. 26. Opinions of different organisations concerning environmental management procedures

### 8.3. Health and safety procedures

Only 29% of respondents from training organisations indicated that practical skills is the area of health and safety are acquired at medium level. Most of waste management facilities seem to be generally satisfied with the outcome of the training programmes (Fig. 27).

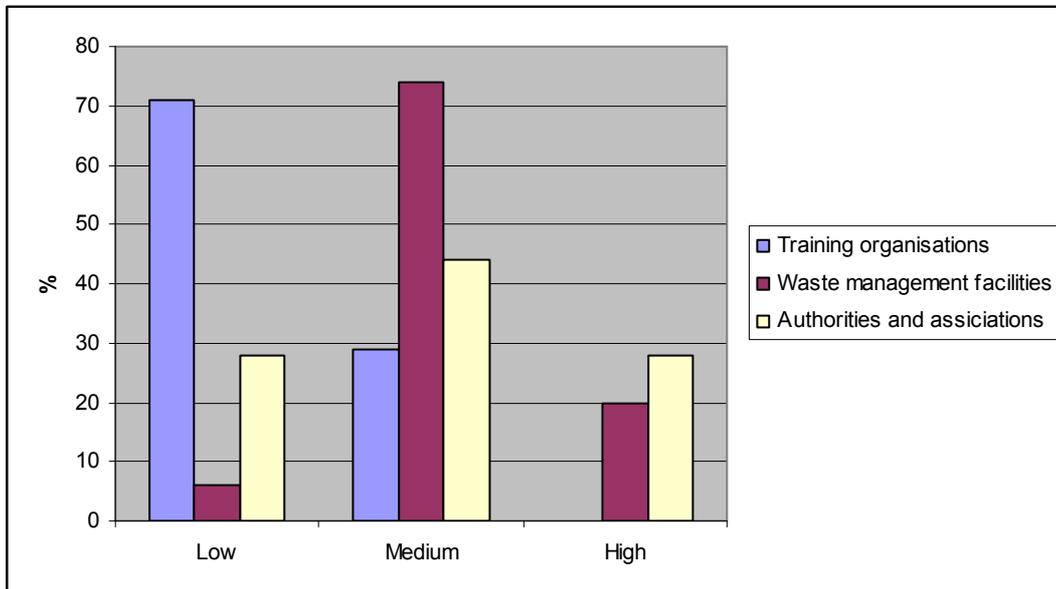


Fig. 27. Opinions of different organisations concerning health and safety procedures

### 8.4. Waste minimisation methodology

As to waste minimisation methodology, opinions of respondents are scattered, but majority of respondents from waste management facilities and authorities/ associations believe that the outcome is medium (Fig. 28).

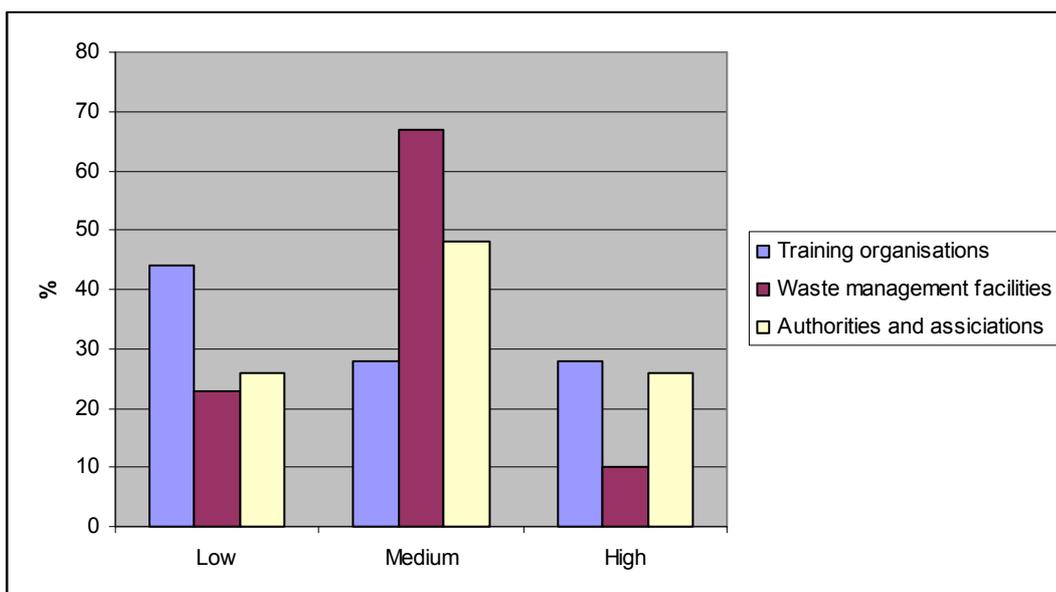


Fig. 28. Opinions of different organisations concerning waste minimisation methodology

### 8.5. Life cycle assessment methodology

Opinions of survey respondents on the learning outcomes in the area of life cycle methodology are almost identical to the learning outcomes in the area of waste minimisation methodology (Fig. 29).

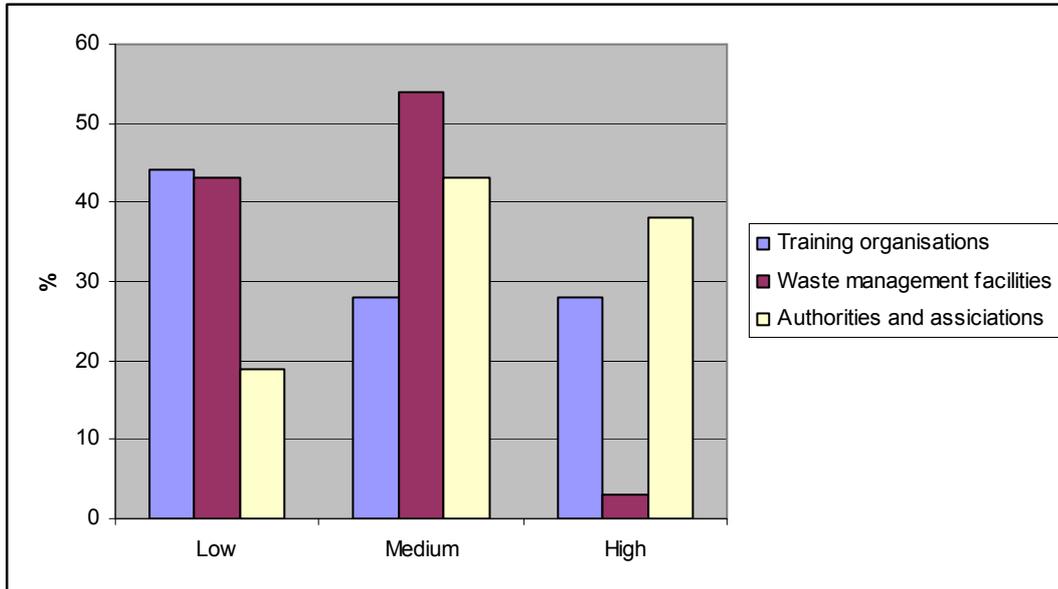


Fig. 29. Opinions of different organisations concerning life cycle assessment methodology

### 8.6. Environmental Impact Assessment methodology.

Majority of respondents from waste management facilities and authorities/ associations believe that knowledge in the area of Environmental Impact Assessment is acquired at medium level (Fig. 30).

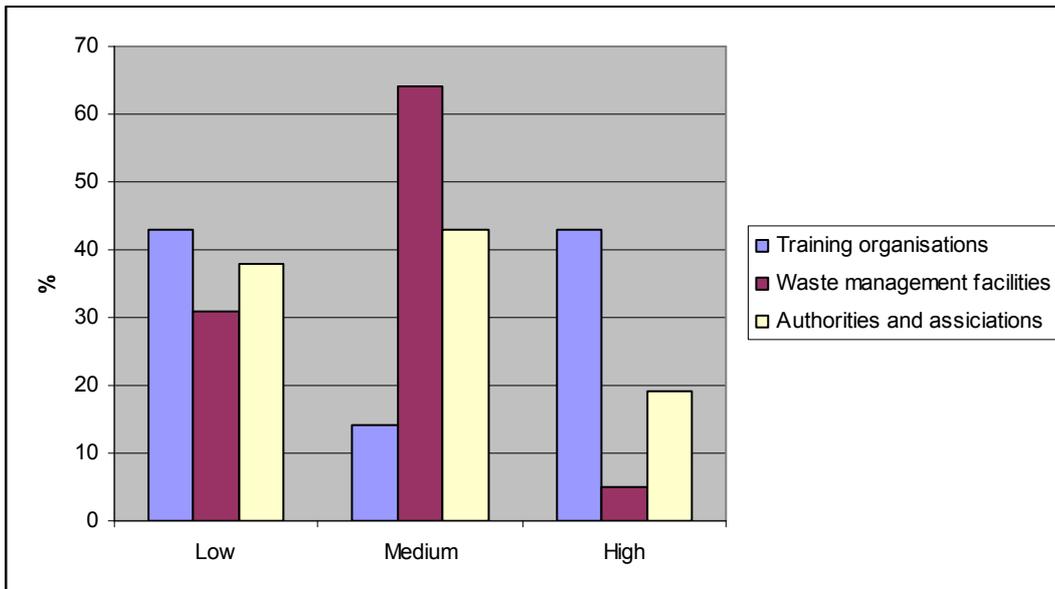


Fig. 30. Opinions of different organisations concerning EIA methodology

### 8.7. Development of IPPC permit application.

57% of respondents from training organisations believe that skills in this area are acquired at high level. This opinion is shared by only 20% of respondents from waste management facilities and authorities/ associations. Majority of respondents from these organization believe that learning outcomes in this area are at medium level (Fig. 31).

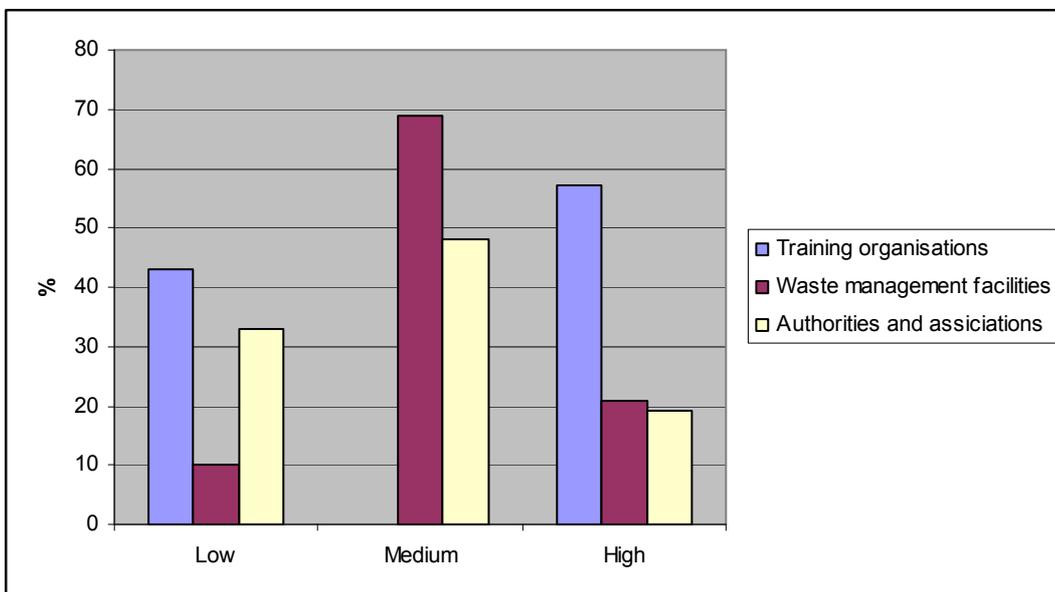


Fig. 31. Opinions of different organisations concerning development of IPPC permit application

## 9. INTEREST/ WILLINGNESS OF WASTE MANAGEMENT FACILITIES' PROFESSIONALS TO ATTEND VOCATIONAL EDUCATION PROGRAMMES

There is general consensus among respondents of the survey that willingness of waste management facilities' professionals to participate in the training programmes is medium to high (Table 10 and Fig. 32).

Table 10. Level of interest of waste management facilities' professionals to participate in the training programmes

Level of interest	Training organisations	Waste management facilities	Authorities and associations
High	29%	41%	29%
Medium	42%	49%	47%
Low	29%	10%	24%

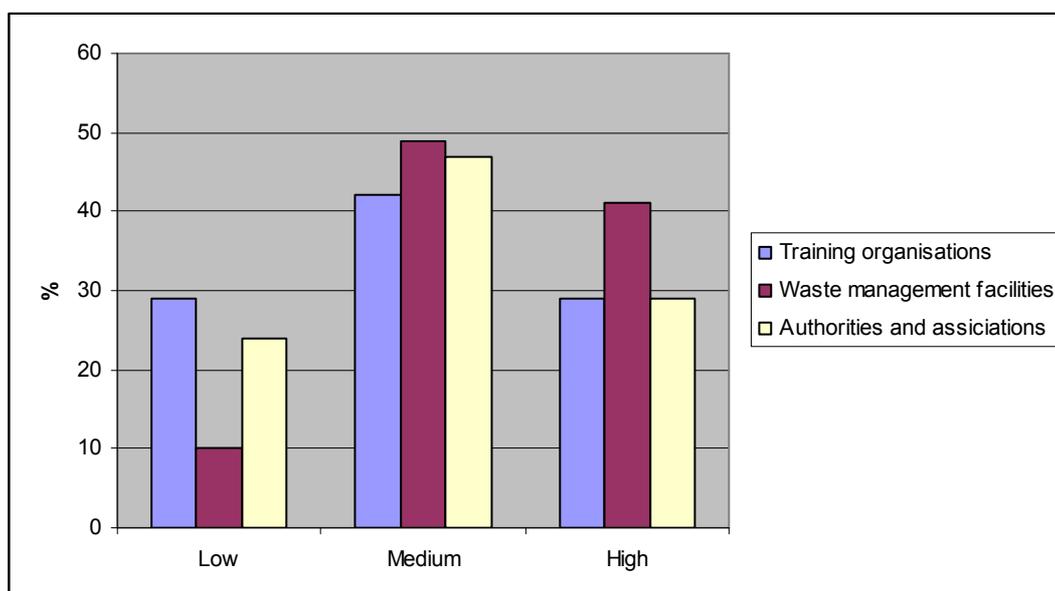


Fig. 32. Opinions of different organisations concerning willingness of waste management facilities' professionals to participate in the training programmes

## **10. OBSTACLES/ PROBLEMS AND SUGGESTIONS FOR IMPROVEMENT OF TRAINING PROGRAMMES INDICATED BY THE SURVEY RESPONDENTS**

Most of suggestions concerning improvement of training programmes for waste management facilities' professionals indicated by the survey respondents in Lithuania focused on practical training aspects of the programmes. Some respondents indicated that in their opinion training programmes for waste management professionals should be more practically oriented. Some respondents mentioned that there is lack of clarity and details as well as clarification of links between theory and practice. It was also suggested that more real life examples, case studies could be used in the training programmes. It was mentioned that some trainers know well legal requirements, but can not explain how to apply these requirements in practice.

Another important aspect indicated by the survey respondents is limited focus on sustainability/ general environmental issues.

One of the key obstacles for development/ improvement of the training programmes in Lithuania is low competition among training organisation due to limited market for such training programmes.

## 11. KEY FINDINGS

A new system of requirements for qualification and training of waste facilities' specialists have been enacted in Lithuania on January 1st, 2013. The new system requires that activities of hazardous waste collection, transportation and treatment as well as landfill operation or waste incineration could be only performed by organisations that have managers and technicians with appropriate qualifications. It is required that waste management specialists (managers and technicians) have to improve their qualification at least every three years by participation in waste management qualification training programmes.

Organisation willing to register waste management qualification and training programme has to submit application to the Ministry of Environment. Training programmes that meet requirements of the waste management qualification and training system are approved by the Minister of Environment, based on recommendations of the Commission for Qualification and Training.

Duration of the training programmes depends on objectives of the training and qualification level of the trainees. For persons attending waste management training programme for the first time, it is recommended to provide training programmes not shorter than 3 days (24 academic hours). Otherwise, the training programmes should be not shorter than 2 days (16 academic hours).

Training programmes for managers and technicians in terms of subjects covered are generally the same. The survey results showed that most of the key subjects necessary for qualification of waste management managers and technicians are covered in the legal requirements for training programmes. However, coverage of the preventive/ sustainability/ environmental management/ product life cycle principles in legal requirements for training programmes is weak.

Timing for different topics is not prescribed in the legal requirements for registered training programmes in the area of waste management in Lithuania. In terms of timing for theory and practise, the legal requirement system for qualification and training of waste management specialists in Lithuania is flexible and allows training institutions to choose the best balance between theoretical and practical training.

Currently, there is only one registered training programme in Lithuania provided by Vilnius Gediminas Technical University (until January 1<sup>st</sup> 2013, there were 3 registered programmes). On-line training opportunities in the area of environmental management have not been explored in Lithuania yet.

In addition to registered training programme for waste management specialists in Lithuania, several organisations provide training courses/ programmes in the area of waste management that could be of interest for waste management specialists. Some of these courses are organised on regular bases (e.g. education programmes at universities, particularly study programmes adapted to the needs of students that work full time in industry).

Opinion of waste management facilities' specialists concerning availability of registered (formal) and other (informal) training programmes is very dispersed. Approximately 50% of respondents believe that availability of both registered and informal programmes is sufficient. Other 50% of respondents have the opposite opinion. In the opinion of the authors of this report, the survey results lead to general conclusions that waste specialists in Lithuania can find necessary training programmes if they are willing to do so, but lack of information about these programmes is reflected in the opinion of those who believe that availability of such programmes is insufficient.

The cost for participation in the training programmes varies from 110 to 150 EUR/ person (the cost is the same for both managers and technicians). The costs could not be considered „too high“ as it is compatible with other management training programmes in the country. The cost for participating in the registered training programme is 100% covered by participating companies or participants themselves. In Lithuania, no subsidies are available for participation in waste management training. However, 43% of training institutions indicated that participation costs are sometimes covered by various projects that include training activities in the area of waste management.

In terms of topic coverage, training organisations generally believe that most of the topics are well covered, while waste management facilities and authorities/ associations believe that most of the topics are only slightly covered. For example, in case of national legal requirements concerning waste management , which is considered by waste management facilities as most important, high percentage of respondents representing waste management facilities and authorities/ associations believe that this topic is slightly covered, while almost 60% of respondents from training organisations tend to consider that this topic is well covered. Least covered topics are those related to pollution prevention, product life cycle assessment, environmental management and corporate social responsibility.

In terms of scope/ contents of the existing training programmes for waste management facilities' professionals, majority of the respondents indicated that the quality of the training programmes is medium. This view is shared by all type of organisations that participated in the survey.

Training organisations that participated in the survey indicated that the ratio between theoretical lectures and practical exercises is approximately 75/ 25. Majority of respondents from training institutions believe that integration of theoretical and practical training is high. However, most of respondents from waste management facilities and authorities/ associations believe that this integration is only medium.

While 100% of training institutions that participated in the survey are satisfied with the quality of training materials, most of respondents from waste management facilities and authorities/ associations believe that quality of training materials could be improved.

86% of training organisations believe that qualification of trainers in existing training programmes for both managers and technicians is high. This opinion is shared by only 1/3 of respondents from waste management facilities and authorities/ associations.

71% of training organisations believe that quality of training facilities is high. Most of respondents from waste management facilities and authorities/ associations believe that quality of training facilities is medium.

In the opinion of survey respondents, most of practical skills are acquired at medium level. However, training organisations have generally better opinion about their programmes in comparison to opinions of other stakeholders that participated in the survey. For example in case of waste management procedures, 71% of training organisations indicated that practical skills in this area are acquired at high level. Majority of respondents from waste management facilities and authorities/ associations do not share this opinion and believe that situation could be improved.

There is general consensus among respondents of the survey that willingness of waste management facilities' professionals to participate in the training programmes is medium to high.

Most of suggestions for improvement of the programmes indicated by the survey respondents in Lithuania focused on practical training aspects of the programmes. For example, it was mentioned that some trainers know well legal requirements, but can not explain how to apply these requirements in practice. Another important aspect indicated by the survey respondents is limited focus on sustainability, preventive and general environmental issues.