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TRAINING NEEDS ANALYSIS FOR THE TURKISH SHIP DISMANTLING INDUSTRY

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ABSTRACT

Nearly 2000 workers are being directly employed by Turkish ship dismantling yards which are located in Aliaga, Izmir. The method of dismantling vessels in all dismantling facilities is essentially the same; with the ship landed ashore under its own power, stripped of equipment and materials, and systematically dismantled.

The Ship Dismantling industry is very important and profitable to the Turkish economy and nearly one million light displacement tones (LDT) dismantled by the end of 2012.

Ship dismantling industry needs skilled workers and safety related issues are very crucial because of the nature of work. There are several hazards for ship dismantling yard workers in case of lack of education and training. Thus, training is one of the most important risk reducing solutions.

In this study, a training needs analysis has been carried out for SD employees by considering questionnaire results. Training needs analysis aims to create a ‘snapshot’ of the Turkish Ship Dismantling employees by capturing the various states of education, competences and capabilities from the lowest grade of worker through to the management level. By analyzing the gathered information the various gaps in awareness, knowledge and procedures found within the Turkish Ship Dismantling industry have been identified and will be utilized in the development and execution of the proposed VET.

Keywords : *Recycling, Ship dismantling, Training*

1. INTRODUCTION

Nearly 2000 workers are being directly employed by Turkish ship dismantling yards which are located in Aliaga, Izmir. The workers generally work in one of the 21 facilities which lie side by side on around 1450 meters of non-tidal coastline (Ozer, 2005). The method of dismantling vessels in all 21 ship dismantling facilities is essentially the same; with the ship landed onshore under its own steam, stripped of equipment and materials, and systematically dismantled.

The Ship Dismantling industry is very important and profitable to the Turkish economy and nearly one million light displacement tones (LDT) dismantled in 2012.

Ship dismantling industry needs skilled workers and safety related issues are very crucial because of the nature of work. There are several hazards for ship dismantling yard workers in case of lack of education and training. Thus, training is one of the most important risk reducing solutions.

In this study, a training needs analysis has been carried out for SD employees by considering questionnaire results. Training needs analysis aims to create a ‘snapshot’ of the Turkish Ship Dismantling employees by capturing the various states of education, competences and capabilities from the lowest grade of worker through to the management level. By analyzing

the gathered information the various gaps in awareness, knowledge and procedures found within the Turkish Ship Dismantling industry have been identified and will be utilized in the development and execution of the proposed VET.

2. CURRENT TRAININGS FOR SD EMPLOYEES

Existing pedagogical materials specifically for the Ship Dismantling industry are very limited and unrecognised in terms of qualification. There have been technical guidelines published by international bodies, Basel Convention in 2003 and ILO in 2004, outlining what is required for safe and environmentally sound ship dismantling but very few materials exist that provide VET for the employees of a ship dismantling facility specifically.

Currently in Turkey there is legislation that addresses occupational health and safety (OHS) training which is applicable to the Ship Dismantling workers in Aliaga. In regulation 25426, Regulation on the Procedures and Principles of OHS Training for employees (TC, 2004), article 17 mentions that employers have a responsibility to train their workers prior to starting work on site or if there is a change in the workers title or job. Additionally, in the regulation, a list of training issues are noted along with the requirement that training certificates should be prepared and filled after any training has taken place: a) General OHS rules, b) Causes of occupational accidents and diseases and risks at workplaces, c) Principles of prevention from accident, incident and illness, implementation of prevention technologies, d) Safe use of working equipment, e) The rights and responsibilities of workers, f) Information about related legislation, g) Safe establishment of system and atmosphere at workplaces, h) Use of PPE, i) Use of equipments with monitors, j) Warning signs, k) Risks caused by chemical, physical and biological materials, l) Order and tidiness, m) Fire and fire protection, n) Thermal conditions, o) Ergonomics, p) Electricity, related hazards, risks and prevention, r) First aid and rescue.

While the list of training issues mentioned in the regulation is an extensive and representative list of the areas and topics Ship Dismantling workers would require training in, there is no obligation to cover all items and no stipulation of a minimum time period to dedicate to training. Therefore it has been observed that training is usually only delivered over a maximum of half a day.

In addition to the above, there is also regulation 25494, Regulation on Heavy and Hazardous Operations (TC, 2004) which stipulates the requirement for Ship Dismantling workers to have specialised training and to hold a license. When an employee starts with a Ship Dismantling yard the employer has to ensure that the new worker has either completed the appropriate training or make arrangements for the worker to be trained by a trainer recognised by the government. The training should cover training topics similar to those mentioned above and be over the duration of approximately 32-40 hours. It is currently uncertain if the Ship Dismantling facilities are currently fully complying with this regulation. The Regulation on Heavy and Hazardous Operations also includes the need for the employer to obtain a valid health report, from a suitably qualified individual, for every new worker prior to commencing work and to carry out annual health surveillance checks.

In the Turkish Ship Dismantling zone, there is mandatory VET currently taking place for the Ship Dismantling workers addressing topics such as general health and safety, fire fighting and asbestos handling being delivered by the Turkish Ship Recyclers' Association.

3. QUESTIONNAIRE

A questionnaire was created to assist in the training needs analysis of the ship dismantling workers. The questionnaire was designed to gather information and the opinion of the workers for the following topics:

- General information

- Previous training received
- Accidents and incidents
- Hazard awareness
- Preferred method of learning

The questionnaires were conducted on the 1st of February 2012 to 61 ship dismantling workers in the Aliaga ship dismantling area and by the 15th of March 2012, 61 completed questionnaires were received.

Age	Number of Respondents	Percentage of Respondents
<18	0	0%
18-25	21	34%
26-35	27	44%
36-50	12	20%
51+	1	2%
Graduated From		
Primary	37	61%
High school	22	36%
College	2	3%
University	0	0%
Post Graduate	0	0%
Experience Year		
1 year or less	8	14%
2 years	11	18%
3 years	8	14%
4 years	5	8%
5 years	5	8%
6 years	2	3%
7 years	7	12%
8 years	6	10%
9 years	1	2%
10 years	2	3%
10+	5	8%
Social Security		
Yes	56	92%
Not regular	5	8%
No	0	0%
Union Membership		
Yes	6	10%
No	55	90%
Health Check		
0-3 months	5	8%
3-6 months	26	43%
6-12 months	29	47%
1-3 years	1	2%
never	0	0%
Job Title		
General Worker	22	36%
Metal Cutter	28	46%
Plant Operator	6	10%
Technician	2	3%
Head Worker	3	5%

Table-1: Profile of respondent workers

According to the results workers are aged around 30 and will pursue a career in ship dismantling

for around 10 years. 61% of graduated from at least primary school respondents, they have approximately 4 years of experience within the Ship Dismantling Industry. 92% of respondents are covered by Social Security and 90% of respondents have no membership to a Union. According to questionnaire, it was found that 98% respondents have a yearly health check up or more frequently. The job titles of the respondents of the questionnaire and the distribution of the different types of Ship Dismantling workers is accurate to that of a typical ship dismantling facility.

In terms of a general overview of the health of Ship Dismantling workers, according to Unal's research, out of the 256 respondents' questioned around 53% smoke, 32% use alcohol and 8.6% have an existing health problem of which, according to the respondents, 3.5% has a suspicion of being a consequence of working in an occupational environment (Unal, 2011).

As seen in Table-2, the majority of respondents are neutral on the overall satisfaction of the quality of training provided. In Figure-1, an overview of the training received by the respondents of the questionnaire can be viewed where it can be clearly identified that the majority of respondents have received training on asbestos and hazardous materials, fire fighting, first aid and occupational health and safety. Of all the respondents it can be seen that no one has received training in the areas of risk assessment, emergency preparedness and environmental protection.

Work Factor	Very Unsatisfied	(%)	(%)	(%)	Very Satisfied	Mean	StDev
	(%)	1	2	3	4		
Job Satisfaction	7	13	30	39	11	3,36	1,07
Overall quality of trainings	3	10	36	33	18	3,52	1,01
Working hours	13	21	43	16	7	2,82	1,07
Safety precautions	0	8	20	39	33	3,97	0,93
Wage satisfaction	20	48	21	10	2	2,26	0,95
Quality of equipment used	3	15	18	38	26	3,69	1,12
Application of safety rules	21	20	39	13	7	2,64	1,16
Health checks	0	5	20	51	25	3,95	0,80
Career progression	18	31	39	10	2	2,46	0,96

Table-2: Satisfaction of SD workers

Additionally, only 6 of the 28 metal cutters who responded to this questionnaires have had unaccredited training. Considering the metal cutting aspect of Ship Dismantling is one of the core work tasks and one of the most dangerous in terms of potential hazards faced, it should therefore be a priority of the VET to address this training gap. It can be easily seen from Table-3 that the most effective course in the opinion of the respondents is the fire fighting course and the one deemed the least effective is the asbestos and hazardous materials course.

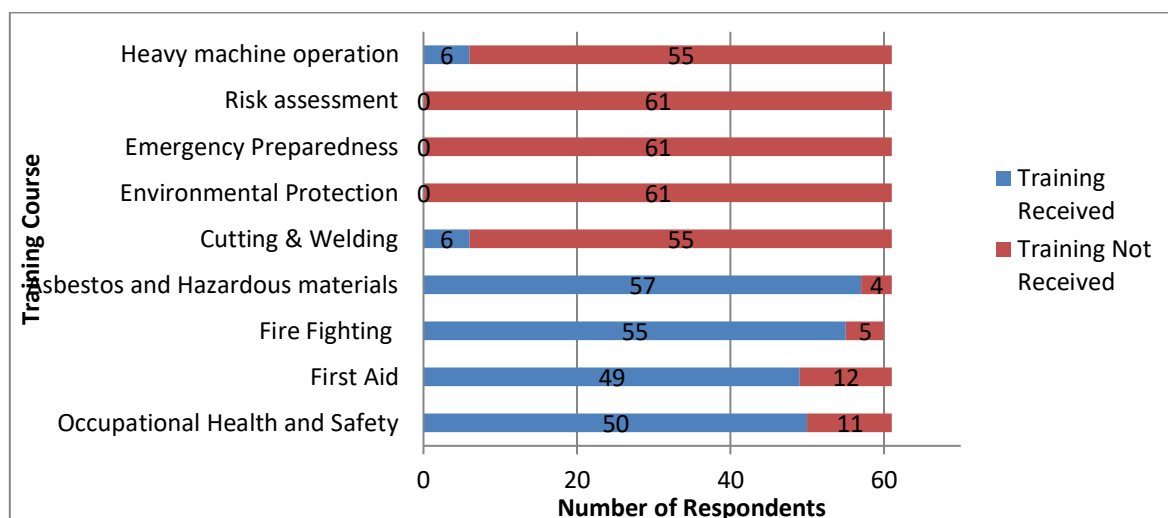


Figure-1: Number of trainings received

This may be because the fire fighting course is certified and therefore deemed to be more useful or may be because they utilise the skills they learned from it on a more frequent basis. In the Ship Dismantling zone in Aliaga it has been observed that a lot of attention is paid to asbestos and general awareness from the workers regarding asbestos is high. However for more subtle hazardous materials such as PCB's a lack of knowledge is prevalent which could be reflected in the current hazardous material training currently received.

Training Course	Not Very Effective	Effectiveness (%)				Very Effective	Mean	StDev
		1	2	3	4			
Occupational Health and Safety	10	12	34	38	6	3,18	1,06	
First Aid	6	8	31	49	6	3,41	0,96	
Fire Fighting	0	4	16	55	25	4,02	0,76	
Asbestos and Hazardous materials	18	11	40	21	9	2,93	1,19	
Cutting & Welding	0	0	50	50	0	3,50	0,55	
Heavy machine operation	0	0	50	50	0	3,50	0,55	

Table-3: How effective respondents thought the training courses were (if taken)

Within the questionnaire, an attempt has been made to assess the hazard awareness of the respondents in relation to what potential hazards the workers think they are exposed to during work. In Figure-2 some of the key hazards the respondents are aware of in their workplace include; dust (62%), cold (62%), working close to moving objects (75%), welding fumes (72%), open fire (74%) and carrying and lifting heavy objects (67%). When comparing the answers with the most common types of injuries there is a direct correlation between the two. Another interesting insight is that while 56% of respondents in the questionnaire identified noise as a hazard in the workplace, when cross referenced with Unal's research less than 10% of workers bothered to wear hearing protection (Unal, 2011). With sound level measurements conducted in Ship Dismantling facilities during the DIVEST research project showing noise levels of up to 105 decibels, the United Kingdom's Health and Safety Executive has an upper exposure action value of 85 decibels, this is another key area which sound be given thought within the Ship DIGEST VET (DIVEST, 2012; HSE(UK),2005).

In terms of hazard awareness, elements from Figure-2, which are causes for concern where lack of identification has been shown are the following: Hazardous materials e.g. Asbestos, PCB, TBT (75%); Working at heights (62%); Oil/fuel spill (66%); Explosive gases (92%); Snapping

of ropes/wires (80%) and Working under dangerous places (57%).

Delivery Method	Very Bad 1	Bad 2	(%) 3	(%) 4	(%) 5	Very Good	Mean	StDev
Small Group Discussion	18	41	23	10	8		2,49	1,15
Classroom&presentation	3	18	59	15	5		3,00	0,82
Film	3	11	46	33	7		3,28	0,88
Computer Assisted Learning	2	2	33	46	18		3,77	0,82
e-Learning	3	2	30	31	34		3,92	1,00
Apprenticeship- Practical Learning	10	30	48	3	10		2,74	1,03
Blended Learning	2	2	23	43	31		4,00	0,88

Table-4: Preferred Training Methodology

The last section of the questionnaire turned the focus onto the teaching and learning methods preferred by the ship dismantling workers. In Table-3, it can be clearly seen that the current training methods, PowerPoint and Film, draw a majority middle of the scale response. In contrast newer delivery methods such as Computer assisted learning, e-Learning and Blended Learning receive a very positive response.

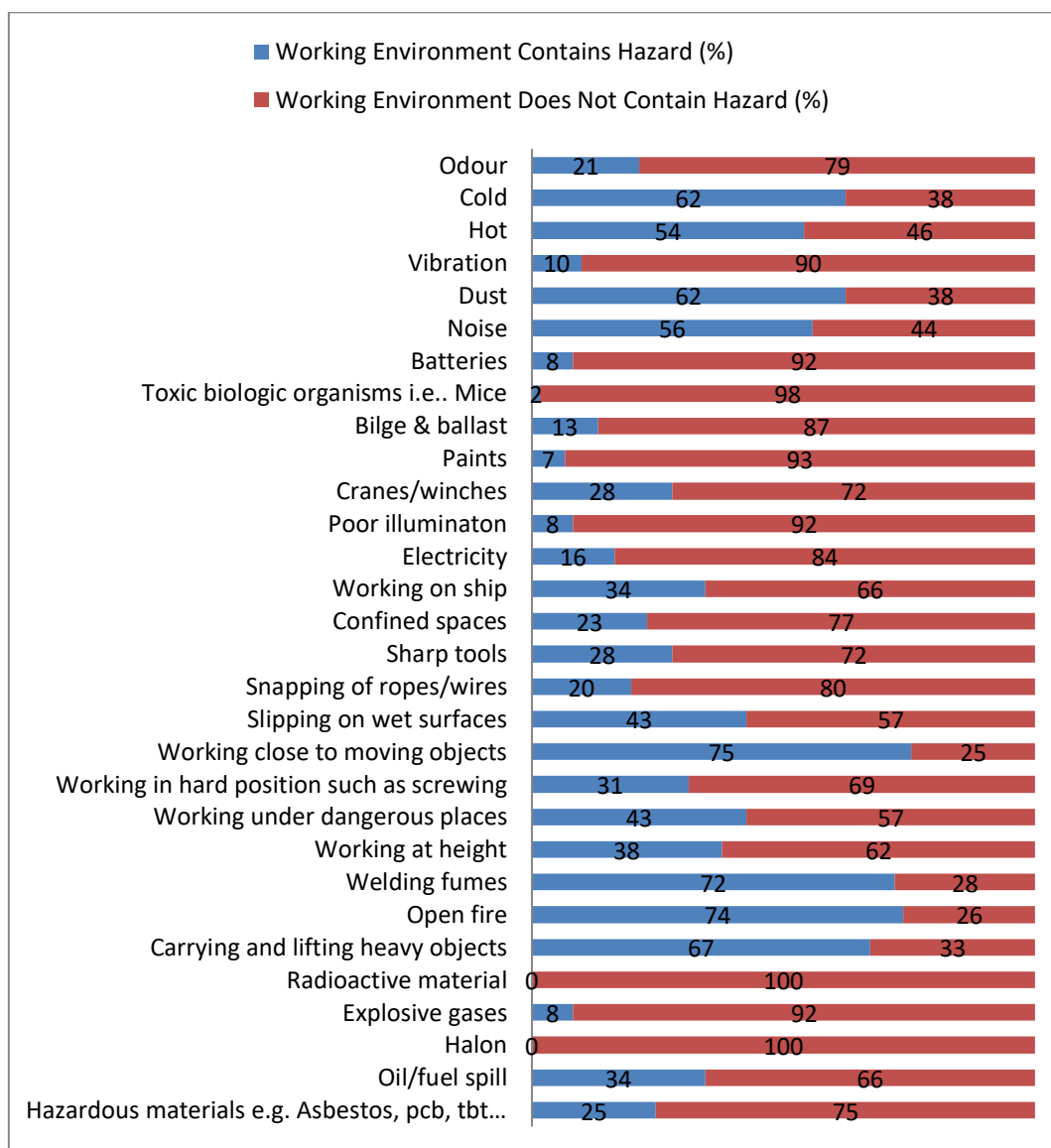


Figure-2: SD Workers' hazard awarenesses

4. CONSIDERATIONS

One interesting insight gained from the responses of the job satisfaction question is the seemingly contradictory results of the workers being satisfied with safety precautions while at the same time being unsatisfied with the application of the safety rules. One way of interpreting this could be a case of the workers assuming they feel they already have enough safety precautions in place and that the application of the safety rules, in their opinion, is too much. This finding highlights a key issue; that the workers, through lack of awareness and judgement, are generally unaware of the full impacts of the potential hazards can have upon them, both in the short term and long term, and therefore do not fully understand reasons behind the application of the safety rules.

Within the Turkish Ship Dismantling industry, there are currently no practical standard procedures for job tasks. Safe Standard operating procedures which reflect the practical reality while addressing safe working procedures should be developed and incorporated into the worker's VET. Additionally a new standard procedure has to ensure that all workers are receiving trainings according to the works they're carrying out prior to starting with their work. Training must be created to address these common accidents in the form of firstly raising awareness and subsequently outlining standard procedures in common Ship Dismantling job tasks. Awareness has to be raised through training in order to create a culture of reporting accidents and incidents amongst the workers. The workers should be taught that reporting accidents will not jeopardise employment and that it is in everyone's best interest to report accidents/near misses to prevent danger and future harm to colleagues. Ship Dismantling workers have very low satisfaction for the wages they earn and their prospects of career progress. The workers should be given training modules highlighting important issues such as workers' rights, the dangers of smoking and the benefits of further education and union membership. It has been shown that metal cutting workers are at the highest risk from falling foul of an accident yet there is no bespoke training currently for them. New and existing workers should be taught about safe and practical standard operating procedures for the job tasks involved in metal cutting. Hazards in which workers identified as not being in their working environment included: hazardous materials; working at heights oil/fuel spill explosive gases; snapping of ropes/wires and working under dangerous places. The workers, through VET, should be made aware of the potential hazards within their workplace and the potential harm (seen and unseen) they may cause. Ship Dismantling workers are continuing to refrain from wearing PPE even when provided with equipment from the management. Areas such as noise, toxic dust and burns are all areas where workers are putting their health and safety at risk. The workers should be taught about the importance of wearing PPE, what kind of PPE they should be wearing, how they should wear it, how to maintain it or when to replace it and the consequences of not wearing it. There is currently no environmental awareness training module for Ship Dismantling workers. The workers should be made aware of the potential environmental impacts they could potentially contribute to in the job tasks they partake in. The workers should also learn about environmental pollution control and mitigation in the result a spill or environmental accident happens.

5. CONCLUSIONS

The existing training for Ship Dismantling workers is currently not extensive enough to fully address the training requirements of the workers. The workers should have access to structured, comprehensive and accredited VET which contains defined and assessed learning outcomes and is refreshed periodically. The VET's content must be structured in such a manner that it can be understood by individuals with a primary school education level while being engaging and interesting for individuals of whom are experts in their respective job tasks. The Ship Dismantling workers are low skilled and low paid workers, therefore issues surrounding job satisfaction, in

terms of career progression and salary, are common. The intended VET must address the associated disillusionment with low job satisfaction and engage the intended target audience by showing that through accredited VET social mobility and opportunities can be increased. Occupational health and safety issues should be focused during trainings. By utilising a wide range of sources and consulting with stakeholders within the Ship Dismantling community, both in Turkey and worldwide, a comprehensive training needs analysis of the Turkish ship dismantling workers and management has taken place with the key problem areas concerned being analysed and identified. Above mentioned issues should be considered during VET development.

6. ACKNOWLEDGEMENTS

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