

# A Study on Creation of Marine Safety Culture in Korea<sup>†</sup>

## 한국의 해양안전문화 창출에 관한 연구

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**Abstract:** After the accident of Sewol-ho, the interest in marine safety has been largely increased. This study aims to give insight into the establishment of marine safety culture in Korea, suggesting its definition, directions and strategies as well as relevant system refinement issues aimed at strengthening activities to promote marine safety culture through the Marine Safety Campaign Program (MSCP). The elements and definition of marine safety culture have been presented based on the concept of safety culture and by incorporating the recent trends in ocean-related areas as well as setting the directions for marine safety culture. Marine safety culture is the aggregation of all knowledge, principles and acts of marine safety activities - which draw

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<sup>†</sup> The MSCP was established on July 19, 2013 as an organization jointly run by the public and private sectors. It aims to improve public awareness of marine safety and put into practice marine safety culture activities aimed at expanding marine safety culture as well as education of the general public on marine safety and its promotion.

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much attention of the time - led by the industry, government, academia, and research institutes as well as by the general public. Also, the scope and definition of marine accidents has been expanded to marine safety accidents that include boating accidents, port accidents, coastal accidents, natural disasters, crew accidents, marine disaster, pirate accidents and maritime terrorism. In order to establish marine safety culture, this study has proposed designation of a marine safety day, development of a marine safety culture index (MSCI), selection of pilot project cities for marine safety, development of marine safety education programs, building of an marine safety experience center, opening of a marine safety broadcasting station and a development of marine safety culture contents.

**Keywords:** Sewol-ho, marine safety culture, Marine Safety Campaign Program (MSCP), marine safety accidents

## I. Introduction

Korea has experienced a series of major accidents in the process of achieving dramatic economic growth, including the collapse of a building (i.e. collapse of Sampoong Department Store, 1995), the sinking of a passenger ship (i.e. the sinking of the Sewol, 2014) and a fire accident on a ship (i.e. fire in the Seolbong, 2011), a marine pollution accident caused by the collision of ship (i.e. Taeon Hebei Spirit oil spill, 2007), a drowning accident (i.e. a private marine camp, 2013), and marine disasters such as typhoons (i.e. typhoon Bolaven, 2012). These accidents have led to the heightened national interest in safety and full-fledged safety culture campaigns mounted by the government. As it is widely believed that the Ministry of Oceans and

Fisheries, which was reinstated in 2013, needs to play a central role in the prevention of marine safety accidents, marine safety culture activities jointly undertaken by both the public and private sectors are proposed as a strategy to prevent and respond to marine safety accidents.

Marine safety activities encompass all activities aimed at preventing and responding to incidents, accidents and disasters occurring in the ocean. For instance, they include activities related to the safety of all ships in the sea, safety in coastal areas such as beaches and seashore rock areas, facilities safety in port and fishing port areas where ship are berthed such as harbors and docks, and safety from marine disasters such as tsunamis and typhoons.

In order to seamlessly execute government tasks, the Korean government presented the importance of the creation of marine safety culture in the “Countermeasures to Reduce Marine Accidents by 30%” announced on April 22, 2013. As 80% or more of marine accidents are caused by human related errors such as carelessness in sailing, (Heo, 2008; KMST, 2009), customized on-site experiential training and raising the awareness of marine safety are drawing much attention. The topic of the human contribution to accidents is one of the main points in developing a safety culture. It is true that human error is the cause of 80% or more of severe accidents but carelessness does seldom belong to this category. Human error refers to slips and lapses such as unintentionally applying a wrong rule or lack of knowledge. Carelessness or even violations is also something else and more intentional human error. Even if we have a safety culture, human errors will be made (we all do them and we do them all the time). Prerequisites for human errors are so called latent conditions such as bad design (e.g. bridge design, man-technology interaction), poor planning, lack of education, lack of risk perception, time pressures on the job and so on. These latent conditions, often created by

decision-makers, can be overcome or better controlled through the development of a safety culture and thus improve maritime safety (Reason, 1997). However, since no systematic study has been carried out on the creation of marine safety culture in Korea, it is utterly necessary to formulate strategies in the mid- and long-term to create a marine safety culture. Thus, it is necessary to create opportunities to raise the public awareness of marine safety culture and encourage the society to develop a keen interest in it. To achieve the government goal of “reducing marine accidents by 30%,” it is necessary to formulate detailed action plans to inspire marine safety consciousness in the general public and to establish a culture of prioritizing marine safety.

This study suggests the definition of marine safety culture based on the definition and theories of safety culture, investigates the conditions required for the establishment of marine safety culture, and draws up promotion strategies to analyze the strengthening of the central management and coordination-related roles - for marine safety culture - of the Ministry of Oceans and Fisheries (MOF) and the MSCP. This study also aims at hammering out a public consensus and policies on marine safety culture and raising public awareness, through the SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis and execution strategies.

## **II. Marine Safety Culture for Marine Safety**

### **1. Marine safety and marine safety accidents**

The definition of maritime safety is found in many types of literature

(Heij *et al.*, 2011; Shih *et al.*, 2010). Understanding the word “safety” in a broad sense is prerequisite to clearly defining marine safety, which has a broader meaning than maritime safety. According to the dictionary, safety means “not being worried about danger or accidents, or the state of being safe from danger or accidents” (Naver Dictionary, 2013). Also, in English, safety means “free from harm, injury or risk: no longer threatened by danger or injury, (Redmill *et al.*, 1997)” which is similar to the Korean meaning. Thus, marine safety is defined as protection of the life of a human being including the protection and stabilization against the danger caused by ocean-related activities as well as protection of property, facilities and environment from marine accidents caused by man-made disasters. It also includes protection activities against natural disasters and emergencies caused by global climate change.

According to the “rules on marine safety and the resolution of maritime accidents,” the accidents occurring in the territorial waters of Korea are classified into maritime accidents, crew accidents, port accidents, disaster accidents, pirate accidents and terrorism (MOF, 2013). Table 1 shows the details of marine accidents.

Table-1. Description of marine accidents\*

Type		Description
Marine accident	Ship accident	Ship accidents occurring in the ocean
	Marine pollution	Accidents caused by the discharge of oil, hazardous liquid and waste from ships and marine facilities
Crew accident		Safety accidents caused by crew such as disturbances on ships, violence and others
Port accident		Fire or explosion that occurred in the harbor or near the harbor area of open ports or designated ports, or accidents affecting or expected to affect the operation of ports

Type	Description
Disaster accident	Marine or port-related accidents caused by disasters
Pirate accident	Accidents where ships are hijacked by pirates or sea robbers, or freight and cash are taken away, and crew and passengers are injured
Terrorism	Marine and port-related accidents included in the list of illegal acts of the national anti-terrorism guidelines

\* Rules on marine safety and the resolution of maritime accidents, The Ministry of Ocean and Fisheries (2013), Korea.

As the use of the sea has been various, it is necessary to expand the concept of marine accidents to include not only ship-related accidents but also port accidents and coastal accidents occurring on beaches and in seashore rock areas in step with the diversified usage of the sea by the population. It is deemed that additional review is needed to decide whether accidents caused by pirates and terrorism will be included in the category of marine accidents. Table 2 shows new classifications of marine safety accidents created by expanding and incorporating the scope of marine safety stated in this study as well as their details.

## 2. Marine safety culture

Marine safety can be accompanied by a sound safety culture involving the elements “lessons learned” and “safety as a value” that are important for the entire organization to succeed in a marine safety culture (Drouin, 2010). The improvements in the marine safety led by the organizational safety culture can strengthen marine safety performance incorporating a process for identifying an organization’s potential leading indicators of marine safety (Berg, 2013).

Safety culture is a value system whereby the attitudes, practices and consciousness concerned with safety become established characteristics of a society. Two theoretical models explain the formation of safety culture: the behavior change model and culture change model (DeJoy, 2005). Based on the behavior change model which is an integration of the behavior change theory of social science and the behavior-based safety theory of safety engineering, DeJoy (2005) asserts that culture change and behavior change combine with other elements (organizational culture, management system, and exposure behavior/conditions) to form safety culture.

Table-2. Description of marine safety accidents  
(classification proposed by the study\*)

Type		Description
Marine accident	Ship accident	Ship accidents occurring in the sea and in marine facilities
	Port accident	Accidents occurring in ports, fishing ports and fishing villages
	Coastal accident	Accidents occurring in coastal areas such as seashore rock areas and mud flats
	Natural disaster	Accidents where typhoons, tsunamis and earthquakes damage ships or cause casualties
Crew accident		Safety accidents caused by crew such as disturbances on ships, violence and others
Marine disaster accident		Naturally-occurring marine disasters such as red tide
Pirate accident		Accidents where ships are hijacked by pirates or sea robbers, or freight and cash are taken away, and crew and passengers are injured
Marine terrorism		Marine and port-related accidents included in the list of illegal acts of the national anti-terrorism guidelines

\* Choi *et al.*, 2013

In order to promote safety culture campaigns, one can directly control the behaviors of individuals or direct their behaviors by changing their attitudes

toward cultural safety; sometimes the two methods can be integrated into one (Kim *et al.*, 2012). Thus, when individual thoughts on safety and their attitudes toward it result in behaviors and elements form the basis of the establishment of safety culture, they affect individual judgment on safety culture and these behaviors can be incorporated into the value system that forms safety culture.

Understanding of culture is a prerequisite for defining marine safety culture and understanding it. Culture is defined as the “aggregation of all capabilities and habits that human-beings have obtained as a member of a society, including knowledge, belief, art, ethics, laws, and customs” (Tylor, 1871). Thus, culture can be regarded as the activities - which draw much attention of the time - led by people. Marine safety culture is the aggregation of all knowledge, principles and acts of marine safety activities - which draw much attention of the time - led by the industry, government, academia and research institutes as well as by the general public, based on the aforementioned concept of marine safety.

Marine safety culture activities can be generally defined as implementation campaigns whereby the attitudes and consciousness concerned with marine safety become established characteristics of a society and then become part of the value system. Also, as the government and the people consider the immature value system concerned with the awareness of marine safety in the society as the cause behind marine safety accidents, they form a consensus on marine safety culture activities. These activities can make a quantum leap when there are doubts about safety, avoidance of incompleteness, a strengthened individual sense of responsibility for marine safety, and marine safety-conscious mindsets.

This research suggests three conditions (policies, requirements for managers, and individual responses) to establish a desirable marine safety culture. These

three categories were classified by the previous study on the desirable safety culture (OSHRI, 2011).

## **1) Policies**

In order to carry out government policies aimed at forming marine safety culture, the government (particularly the MOF) and the MSCP need to raise awareness of marine safety culture among the general public and to help them understand it. Accordingly, the MOF was reinstated on March 23, 2013 and the MSCP established jointly by the public and private sector was launched. The government needs to have the members of the MSCP become accustomed to the guidelines on marine safety culture, inform the general public of the objectives of the organization as well as marine safety culture activities, and invest sufficient resources into the activities by clearly defining responsibilities for marine safety issues. Also, the MSCP and its members need to survey and evaluate all their activities related to marine safety issues on a regular basis and to be aware that organization-wide focus and dedication are required. These marine safety culture activities need to be publicly undertaken through the MSCP, to show the social responsibilities of the organization, and to actively express the willingness for execution.

## **2) Requirements for managers**

It is necessary to establish detailed rules and systems for the responsibilities of managers geared toward forming and fostering environments for marine safety and its effective management based on the policy activities and objectives of marine safety culture. Also, tangible rewards and punishment for responsibilities for the marine safety management activities (e.g. supervision, monitoring and understanding of marine safety management guidelines and

standards) undertaken by qualified and trained managers need to be specified by the rules and systems.

### 3) Personal responses

In addition to the policies and requirements for managers — of the conditions required for the establishment of a marine safety culture — personal responsibilities are also required for marine safety. Individuals, before performing marine safety-related operations, need to be well-acquainted with the guidelines on marine safety accidents and to be willing to ask managers or experts about cautious approaches for marine safety such as (1) operational procedures, (2) compliance with procedures, (3) alert systems for unexpected things, (4) responses to problems, and (5) ways to ask for help (Kim et al., 2012). This is a part of the safety culture difficulties. These could be overcome by education, safety awareness levels and access to well-functioning support systems for safety.

## III. SWOT Analysis and Strategies

### 1. Directions

It is necessary to set directions for the promotion of marine safety culture in order to push ahead with marine safety culture policies in a consistent way to certain directions. The basic directions for marine safety culture activities are as follows:

- (1) The MSCP should be used to combine the capabilities of both the

public and private sectors. The government should take responsibility for the management of the program during the initial stage to build up momentum, and the private sector should take over the responsibility later.

(2) The targets of the marine safety culture campaign should be expanded from those engaged in marine affairs and fisheries to the whole population.

(3) The subjects of the marine safety culture campaign should be expanded from maritime affairs to all individuals who are utilizing the sea.

(4) To establish a marine safety culture, the development of education systems should focus on those related to ships into a diversified marine safety culture promotion and allow everyone from children to adults to experience the culture in daily life.

To achieve mid- and long-term goals and visions aimed at establishing an advanced marine safety culture, the government, society and private sector can set strategic directions for them as Fig. 1. The government should prepare

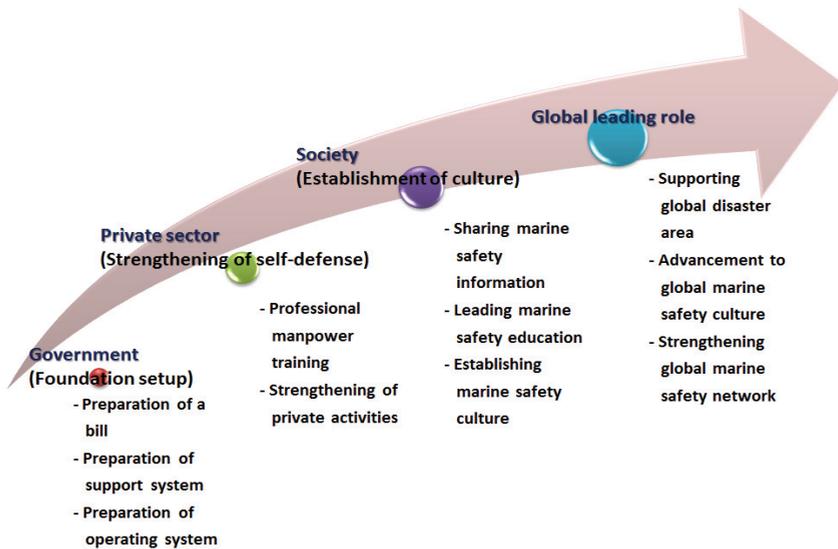


Fig-1. Future-oriented cooperational work system for the establishment of advanced marine safety culture

legislative bills and establish support and operational systems to build an advanced marine safety culture. The private sector should endeavor to foster and strengthen autonomous marine safety culture activities as well as to revitalize the nurture of skilled professionals. The society should lead marine safety education and share marine safety information to enhance the capability to create and develop marine safety culture. When these activities take root and become revitalized, Korea will be able to become a global leader in marine safety culture and to join the ranks of advanced countries in marine safety culture before long. Also, Korea's marine safety culture activities will become an exemplary success of the global marine safety culture, allowing the country to become a developed ocean country in the area.

## 2. Strategic tasks

Strategic tasks for establishing marine safety culture have been derived through SWOT analysis. Table 3 shows the current status of marine safety culture activities and their directions through SWOT analysis. Methods to make the most of strengths and opportunities and to eliminate weaknesses and threats are explored through SWOT analysis. First of all, it is necessary to define marine safety to unify marine safety culture activities that have been executed separately. It is then necessary to (1) designate a marine safety day on which the government and the society resolve to make necessary efforts, (2) to develop MSCI to evaluate the achievement of each municipality in terms of marine safety, and (3) to select cities in which pilot projects of marine safety will be carried out in order to use them as strategic footholds for marine safety culture. Also, it is necessary (4) to make marine safety

education programs in which all generations from children to adults can participate, (5) to build a marine safety experience center, and (6) to build a marine safety broadcasting station to allow users of the sea to easily obtain and use required information. In addition, (7) plans to start businesses through marine safety culture need to be formulated to increase the national wealth through the development of marine safety culture contents.

Table-3. Strategic tasks aimed at establishing marine safety culture through SWOT analysis proposed by the study\*

SWOT Analysis	Description
Strengths	<ul style="list-style-type: none"> <li>- Integrated marine safety management enabled by the establishment of the Ministry of Oceans and Fisheries</li> <li>- Formulation of government-wide mid- and long-term safety measures for ship safety and establishment of laws and systems required for it</li> </ul>
Weaknesses	<ul style="list-style-type: none"> <li>- Mounting of ship type-specific and business type-specific safety culture campaigns</li> <li>- Training and promotion focused on the enhancement of the job capabilities of those engaged in marine affairs</li> <li>- Lack of the awareness of marine safety among municipalities</li> <li>- Lack of safety management systems for the use of the sea other than the use of ships</li> </ul>
Opportunities	<ul style="list-style-type: none"> <li>- Increase interest of the general public in the ocean and their increased demand</li> <li>- Creation of a social atmosphere that gives weight to safety</li> <li>- Establishment of an environment wherein culture creates added value</li> </ul>
Threats	<ul style="list-style-type: none"> <li>- Vague anxiety of the general public over the ocean</li> <li>- Inadequate communications and general technical knowledge</li> <li>- Decisions based on inadequate information</li> <li>- Faulty standards, policies, and practices</li> <li>- Poor maintenance ships and equipment</li> <li>- Insensitiveness to safety due to mammonism</li> </ul>

\* Choi *et al.*, 2013

### 3. Execution strategies

#### 1) Designation of a marine safety day

As the marine activities of the population have recently been expanded steadily, it is necessary to designate a marine safety day to raise awareness of marine safety (Fig. 2 events taken on the day of the establishment of the MSCP, taken on July of 2013 at Busan in Korea). It is also necessary to raise awareness of safety among those engaged in marine and fisheries industries especially sailors and fishermen. In particular, to reduce the number of man-made mistakes and errors that account for 80% or more of marine safety accidents (Heo, 2008), it is necessary to emphasize the need for the establishment of marine safety culture by celebrating a marine safety day and raising awareness of marine safety. The way to designate a marine safety day, when it comes to the appropriateness of the selection and promotional effects,



Fig-2. A picture of marine safety quiz contest as a part of the marine safety day

is to select a day after collecting various ideas and carrying out opinion surveys. The objectives of the marine safety day are to cut human and material losses by reducing marine safety accidents and to allow people to safely enjoy and use the ocean.

## 2) Development of a MSCI

In order to actively reduce the number of all safety accidents related to national marine activities, it is necessary to develop and utilize the MSCI as a method to greatly change the perceptions of marine safety culture and to raise the awareness of marine safety culture. A few steps are required to develop MSCI: first, safety culture index measurement items derived based on the analysis of the usage of safety culture indexes in and outside the country as well as items analyzed through in-depth discussions of experts need to go through the review process of expert groups and they need to be classified into either Social Statics Safety Index (SSSI<sup>1)</sup>) or Personal Behavior Safety Index(PBSI<sup>2)</sup>). MSCI needs to be used as an index to systematically assess marine safety awareness and the level of marine safety culture. The index needs to be actively used to realize a safe, clean sea with a future and with hope in the longrun.

## 3) Designation of cities for marine safety

The designation of cities for marine safety is required to direct the attention of local residents toward marine safety as well as to introduce and

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1) This index is based on social statistics related to safety. It uses statistics on accident status, damage status and safety organizations as inputs as well as produces various estimates for human and social factors such as populations and generations to measure and assess safety levels.

2) This index shows safety levels concerned with personal behaviors. It measures and assesses, through survey questions, subjective personal safety behavior-related capabilities in daily life and emergencies such as fire and disasters.

spread efficient marine safety accident prevention plans. The pilot project cities provide opportunities for cooperation to the government, municipalities and the private sector as well as play critical roles as base cities to embed marine safety culture in daily life and enhance it. According to the laws specifying the procedures for designation of cities, the Minister of Land, Infrastructure and Transport (MLIT) can designate them or they are designated at the request of the heads of central administrative bodies (i.e. the minister of MOF) or mayors and governors. To request the designation of a pilot project city, opinions of local residents and heads of relevant municipalities (mayors and governors must consult with their urban planning commissions) need to be collected through surveys and release of information, and documents required for designation need to be submitted to the MLIT (Presidential Decree, 2013).

#### **4) Development of marine safety education programs**

The increased value and usage of the ocean have led to an increased number of accidents in the ocean. Although the government has formulated and pushed ahead with policies aimed at reducing marine safety accidents, it is difficult in reducing such accidents dramatically. Thus, a social consensus has been formed that it is necessary to carry out systematic educational programs, including field curriculum (Fig. 3 taken on the day of the establishment of the MSCP on July of 2013 at Busan in Korea) on marine safety on a regular basis so that all the general public as well as marine and fisheries experts can raise their awareness of marine safety and thus prevent marine safety accidents and establish marine safety culture.

To this end, it is necessary to carry out marine safety leadership training programs in a wide variety of ways for marine and fisheries experts, and the

trainees should be divided according to subjects. The training for kindergarten, elementary, middle and high school students and the training for the general citizens also need to be classified as school training and general training, respectively. On-site level-specific training should be carried out in each marine sector through rules and regulations, environmental protection, weather and sea status, emergency treatment, lifesaving and firefighting training, etc.



■ Fig-3. A picture of cardiopulmonary resuscitation (CPR) as a part of field education ■

## 5) Building of a marine safety experience center

Like the 365 Safe Town in Taebaek-si of Kangwon-do (<http://www.365safetown.com>), it is necessary to build a marine safety experience center that provides marine safety-related education programs and facilities targeting the general public to allow them to experience the pleasant and safe use of the sea and to learn how to prevent marine safety accidents. The center should provide experience-

based on-site fun, interactive training in order to raise safety awareness among the general public and have more people follow safety rules in daily life.

The center could have a wide variety of types of facilities: a marine calamities/disasters experience pavilion that includes facilities to experience fire and submergence accidents of ships, emergence escape experience facilities, and 4D marine calamity/disaster experience facilities, a marine leisure experience pavilion that includes fishing and leisure boat hazards experience facilities, beach hazards experience facilities, mud flat hazards experience facilities, small ship building and boarding experience facilities, etc. and a marine safety-related job experience pavilion that includes ship handling simulator, sailing system experience facilities, state-of-the-art R&D experience facilities, virtual boarding experience facilities for each type of ship, etc.

## **6) Opening of a marine safety broadcasting station**

Since Korea is a peninsula country, the information regarding marine affairs is very important. There is, however, no specialized broadcasting station that produces and provides ocean-related programs for the general public. Thus, it is necessary to open a marine safety broadcasting station not only to deliver information on sea weather, maritime transportation, marine leisure and fisheries but also to spread marine safety culture and raise the awareness of marine safety among the general public. Opening of a marine safety broadcasting station requires the following conditions; (1) understanding of the current status of provision of marine safety information, (2) formulation of the conception of broadcasting aimed at delivering information to the general public, (3) presentation of the overview of the broadcasting

station serving as a platform to enable broadcasting, (4) analysis of the type of broadcasting station suitable for the current situation, (5) consideration of outstanding issues, and (6) basic directions forward. Marine safety broadcasting can be delivered through ground wave radio broadcasting, cable TV, satellite broadcasting, and internet protocol television (IPTV) channels. Since Korea is also a technically-advanced country in the information technology (IT) industry, it is necessary to apply mobile internet technology as early as possible that can be used to deliver internet broadcasting services through smartphone applications to allow ships and fishing boats to tune in to the station in the sea.

## **7) Development of marine safety culture contents**

It is deemed that various businesses need to be run in order to actively respond to the risk of marine safety accidents. In this regard, promotion of marine safety-related key issues using cultural content as well as relevant education could be a useful method. There are some ways to start businesses through marine safety culture: mounting marine safety culture campaigns using characters that can maximize communication effects (e.g. campaign characters delivering social enlightenment and public campaign advertisement; fancy character creating the value of products and goods, (Yang, 2005)); use of both characters and animation films (e.g. in connection with existing experiential pavilions such as Pororo Park<sup>3)</sup>); and use of games and webtoons(i.e. functional games based on stories on marine safety can remind players of the importance of marine safety, providing fun and education effects.).

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3) This is an edutainment space whereby educational effects are generated through play and games. It is a place for play culture where Pororo characters familiar to children allow them to mingle with their peers and to enjoy games (www.pororopark.com,2013)

## **IV. Recommendations for Marine Safety Culture by MSCP**

It is necessary to come up with ways to revitalize the MSCP, which was jointly launched by the government and the private sector to build a general management and coordination system aimed at achieving the establishment of a higher marine safety culture, in order to have the private sector take over its management for the full-fledged establishment of marine safety culture businesses. The MSCP could be turned into a non-profit corporation or incorporated into existing institutions and organizations.

### **1. Non-profit corporation**

The MSCP is an important organization serving as a pillar of marine safety culture as a public foundation. It has not secured a character of public interest in terms of its operational system; so there are limitations in assessing the basis for public support and its effects and the MSCP needs to secure expertise and safety. Accordingly, the government could consider the MSCP a non-profit organization to strengthen its public interest character to be able to greatly benefit the general public and to explore ways for development.

This movement would lay the institutional foundation for the natural non-commercial aspect and permanency of the MSCP, establishing an institutional operational system that brings social recognition and support based on the public interest character and permanency. It is deemed that the MSCP should be turned into a foundation corporation or a public corporation

specified in the Civil Act and that it should build a permanence operational system. If the MSCP is run as a non-profit corporation, it can have an institutional framework whereby the operating committee can take responsibility for its operation; thus the system can lay the foundation required to continuously put marine safety culture into practice. Also, as the establishment of the MSCP as a non-profit corporation can prove public interest institutionally, it can strengthen the motivation for public support and bring differentiated public support.

The MSCP's strengthened character of public interest and social credibility achieved by turning it into a non-profit corporation will create a virtuous cycle whereby its operation can continue on a stable foundation, promoting marine safety culture, which will be further expedited when the central government (the MOF) and municipalities endeavor to raise awareness in local communities. Running the MSCP as a non-profit corporation will also allow the central and local governments to formulate marine safety culture policies and to plan supportive projects with a stable, long-term view, as well as to strengthen differentiated tax benefits and financial and non-financial support. The non-profit corporation can secure the conditions required for the development and invitation of various financial sources from the private sector and then can receive support from the private sector such as designated contributions from individuals, foundations and companies, which will allow the MSCP to diversify financial sources and revitalize its operation.

The aforementioned effects can ultimately lay the foundation for the enhancement of the operational capability of the MSCP through the improvement of its human, financial, knowledge- and information-based, and technical capital. In particular, as the non-profit corporation has high public

confidence, it can easily attract a skilled labor force and have good conditions for cooperation with external institutions such as primary, secondary and tertiary educational institutions as well as public organizations.

Although establishment of a non-profit corporation requires the approval of competent administrative agencies (Article 32 of the Civil Act), the current Civil Act doesn't have specific rules on the approval for the establishment a non-profit corporation; so the approval is decided based on the policy-based judgment of such agencies (Yang *et al.*, 2011). Thus, it is necessary to consider the fact that the establishment and activities of a non-profit organization with diversified objectives could be restricted by the judgment of competent government agencies.

## 2. Assignment of roles for existing institutions and organizations

The MSCP can be incorporated, as an affiliated organization, into public organizations which perform similar functions such as the Korea Ship Safety Technology Authority<sup>4)</sup> or the Korea Marine Environment Management Corporation<sup>5)</sup> and move into their buildings. Existing institutions or organizations can take over the functions and organizations of the MSCP to develop marine safety culture. Since this does not require the construction or renting of separate buildings and only requires a little increase of the budget of existing institutions allocated for operational support while maintaining the government support for the budget of existing institutions, it can easily overcome the operational obstacles and is actually an easy way to push ahead with it.

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4) A special corporation that secures safety for the sailing of ships as well as researches on, develops and distributes ship-or ship facilities-related technologies ([www.kst.or.kr](http://www.kst.or.kr), 2013).

5) A special corporation that efficiently carries out the preservation, management and improvement of marine environments as well as the prevention of marine pollution. It develops relevant technology and executes education and training projects ([www.koem.or.kr](http://www.koem.or.kr), 2013)

This method enables the reduction of additional tasks such as the building of connection systems by installing and running the MSCP within existing institutions that have similar functions or that need to have functional connections, strengthening their marine safety-related functions. It is also expected that marine safety culture activities will be swiftly reinvigorated by building on the organizational structure and knowhow of existing institutions. However, there is a disadvantage: while the MSCP aims to improve the overall marine safety culture, the objective may be different from the key operations of existing organizations. In addition, whether existing public institutions have additional space and budget to accommodate the MSCP is a critical factor.

If the government and the steering committee of the MSCP need to choose one out of the two above options, it is deemed that they should be incorporated into existing organizations in order to receive stable support for its rapid settlement. It should be established an independent non-profit corporation in the long-term and secure legal bases for the support of the establishment.

## V. Conclusions

A clear definition of marine safety culture is critical in the institutional improvement of marine safety and formulation of required policies. While the existing definition of marine safety emphasizes the awareness of safety, this study has presented its more proper definition and the important practical task of developing a marine safety culture so that marine safety issues can be resolved in a sustainable manner through constructive conditions for the

establishment of the marine safety culture.

This study has presented, for the establishment of the marine safety culture, not only designation of a marine safety day, development of a marine safety culture index, designation of cities for marine safety, development of marine safety education programs, building of a marine safety experience center, opening of a marine safety broadcasting station, and methods to develop marine safety culture contents as strategic study tasks, but also the general management and coordination roles for the MSCP, laying the foundation for the establishment of the marine safety culture. While only the lacks of both the awareness of safety and safety infrastructure focused on ships were considered as the causes behind maritime accidents, this study has reexamined their concepts and classification carefully as the poor safety-related conditions of all marine activities as the causes behind marine safety accidents.

In order to effectively achieve the sound establishment of the marine safety culture, support from the MOF as well as the central management and coordination of the marine safety culture by the MSCP is required. Basically, participation of the government and the private sector as well as the cooperation of other government departments is prerequisite. It is necessary to carry out various R&D tasks on each execution strategy to realize the sound establishment of an advanced marine safety culture. The further study would be also recommended to engage the private sector and reflect the implications deriving from international case studies on marine safety culture, developing strategies drawn by a variety of marine safety culture business.

## Acknowledgements

This research was supported by the Ministry of Ocean and Fisheries of the Republic of Korea. We appreciate the help of Dr. Peter Han in Korea Maritime Institute and public officials in the Maritime Safety Policy Division of the MOF, in improving the manuscript.

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투고일 2015. 2. 25.  
1차 심사일 2015. 6. 11.  
게재확정일 2015. 7. 3.

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