

# A Study on the Marine Casualty in Terms of Disaster Prevention Administrative Law

Hyeon Cheol Moon

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The amount of marine transportation by vessels has been increasing rapidly because of enlargement of trade amount in global age, increase of export-import materials mobilization amount and tendency to globalization, even though Korea that has three coasts of sea depends on marine transportation in proportion to more than 99% of foreign trade. In addition, there are more and more people who would like to enjoy themselves on the sea, river and lake etc. According to these conditions, marine accidents occur frequently, and especially marine accident on big and high-speeded vessel contains an irresistible danger all the time because of specific environments. It needed urgently to detect and rescue life and body of victim brought about by sinking, stranding, overturning, collision and fire of vessel not only in territorial waters and open seas but also river and lake, and to solidate and improve the international and national system for the protection and supervision of victims.

**주제어:** marine casualty, vessel safety law, sinking, stranding, overturning, collision, territorial waters, open seas, fishing ship, freight ship, oiler, towboat and passenger ship, international administrative law, international law, national law, marine transportation safety law, disaster prevention administrative law

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## I. Introduction

The amount of marine transportation by vessels has been increasing rapidly because of enlargement of trade amount in global age, increase of export-import materials mobilization amount and tendency to globalization, even though Korea that has three coasts of sea depends on marine transportation in proportion to more than 99% of foreign trade. In addition, there are more and more people who would like to enjoy themselves on the sea, river and lake etc. According to these conditions, marine accidents occur frequently, and especially marine accident on big and high-speeded vessel contains an irresistible danger all the time because of specific environments.

It needed urgently to detect and rescue life and body of victim brought about by sinking, stranding, overturning, collision and fire of vessel not only in territorial waters and open seas but also river and lake, and to solidate and improve the international and national system for the protection and supervision of victims.

## II. The Problems of Marine Casualty and its Situation

### 1. Situation of Marine Casualty

#### 1) Marine Transportation Environments

##### (1) Unfavorable Sea Lane Condition

Korean total coastline comes to 12,789km(South Korea) and there are 22,00 islands(3,165 more than 300m round) most of which are located in South Korea, and the marine territory of jurisdiction is 336,175km<sup>2</sup>(3.4 times the size of South Korea). Because of this marine condition, sea lanes are very complicated and there are many narrow waterways. And Korean marine has many unfavorable conditions, for example sunken rocks and coral islands around sea lanes to obstruct navigation. Moreover, because a fishing ground not to be seen even in marine chart is installed here and there around sea lanes, sea lanes can be invaded at times, and also wasted fishing nets floating around them are great obstacles to a safe navigation.

##### (2) Incessant Increase of Marine Transportation Density

If we analyze the environments of marine transportation, the ocean-going ships entering-leaving port are increasing explosively, and not only the number of average ton per ship, but also of coast-ships transporting the inter-port freight is growing rapidly. Also container freight is increasing rapidly on account of rise of large-sided container ship, and it is prospected that container freight will increase by the rate of 6% for five years ahead from now.

#### 2) Marine Casualty

##### (1) Concept of Marine Casualty

The concept of marine disaster in the positive law is defined and used a little abstractly

according to the purpose of laws regulations. It includes the sum of all the accidents in relation to vessels on the sea in the general sense, and it can be defined as all the dangers on the sea that a vessel can not overcome for itself in the case of destruction or damage onto vessel or freight.

The article 5 of the law on the marine casualty inspection and judgement states about the concept of marine casualty that “it can be defined as the case of obstructing the safety or navigation of vessel including the damage or destruction of a facility except for vessel and the injury and death of person in relation to the structure, equipment and operation of a vessel.”

## (2) Situation of Marine Casualty Occurrence

Korea located on the center of marine transportation in North-East Asia is on the sea lane in the North Pacific Ocean, and maintains a close sea lane network

with Japan, Asian Continent and Asian countries. There are many obstacles such as sunken rock and coral island around sea lane to do harm to navigation, and so marine accidents occur frequently because of the influence of dense fog in Summer and strong North-East or North-West monsoon in Winter.

In addition to these natural factors, non-powered barge on the shore and fishing ground supervision ship for the fishing farm supervision etc. obstruct the order of marine transportation greatly by navigating on the sea lane at high speed at night or under fog or by violating all sorts of criminal law.

Marine transportation is endangered by enlargement and equipment of fishing farm and fishing net not to be seen on even on marine chart toward onto the territory out of approved location, and furthermore they sometime obstruct the order of marine transportation by invading even the crowd sea lane within sea lane and on the shore.

### ① Statistics on Marine Casualty

I will analyze, arrange by a chart and introduce occurrence situation of marine casualty according to the number of tons, use of vessel and reason of accident in the case of marine accident for the last 10 years from 1994 to 2003 on the basis of “A Study on the Domestic Adoption Result Analysis of ISM Code and Development Program Establishment”(Park Sung Il, Department of Navigation, Mokpo National Maritime University, ordered by the Ministry of Maritime Affairs and Fisheries, 2005. 9)

### ② Result of Analysis on the Marine Casualty according to its Types

a. Marine Casualty according to the Number of Tons

The vessels less than 100 tons occupy the proportion of 68.7% out of total marine accidents as seen on the <table 1> according to the number of tons. Big-sized freight ships occupy most of the rest, and the vessels less than 100 to 500 tons procure marine accident in proportion of 11.2%, and those less than 1,000 to 5,000 tons occupy the proportion of 7.9%.

It is surveyed on the basis of the vessels more than 1,000 tons that the rate of occurrence fell to the minimum in 2000 past three years after ISM Code being coerced and afterwards was inclined to increase a little bit, but increase and decrease tendency of marine casualty doesn't appear.

<Table 1> Occurrence Situation of Marine Casualty according to the Number of Tons

(unit: vessels)

number of tons year	less than 20 tons	less than 20 to 100 tons	less than 100 to 500 tons	less than 500 to 1,000 tons	less than 1,000 to 5,000 tons	less than 5000 to 10,000 tons	more than 10,000 tons	unidentified	total
1994	253	308	122	39	71	6	32	37	868
1995	227	324	126	53	77	11	25	68	911
1996	217	326	112	41	68	7	24	49	844
1997	316	409	117	32	63	10	25	55	1,027
1998	318	357	92	29	62	16	15	47	936
1999	378	394	102	24	58	11	27	47	1,041
2000	254	318	72	31	62	10	12	21	780
2001	276	289	64	43	61	12	25	9	779
2002	299	221	80	47	82	20	26	—	775
2003	305	203	94	44	88	11	19	3	767
계	2,843	3,149	981	383	692	114	230	336	8,728
rate(%)	32.6	36.1	11.2	4.4	7.9	1.3	2.6	3.9	100

b. Marine Casualty according to the Use of Vessels

Fishing ship, freight ship, oiler, towboat and passenger ship in this rank for past 10 years have brought about marine accidents as seen on the <table 2>. The marine accident rate of vessels that are not subjected to ISM Code occupy the proportion of about 70% out of total marine casualty. The accident rate of oiler and passenger ship from 1998 when ISM Code was adopted compulsively, reduced by 50% point but the marine accident of towboat, not a ship for exclusive

use economically, has been increasing steadily. On the other hand, it is surveyed that after the accident rate of freight ship have fallen sharply for about three years, it has risen little by little, but the range of increase and decrease is not so much.

<Table 2> Occurrence Situation of Marine Casualty according to the Use of Vessels

(unit: vessels)

year \ use	passenger ship	freight ship	fishing ship	oiler	towboat	others	total
1994	25	123	580	50	37	53	868
1995	20	137	578	50	36	90	911
1996	20	101	577	54	23	69	844
1997	21	109	789	42	23	73	1,027
1998	13	73	700	34	28	88	936
1999	15	97	781	24	41	83	1,041
2000	15	93	586	14	25	47	780
2001	13	116	537	23	40	50	779
2002	13	132	509	17	46	58	775
2003	10	123	483	28	51	75	767
계	165	1,101	6,090	336	350	686	8,728
rate(%)	1.9	12.6	69.8	3.8	4.0	7.9	100

c. Marine Casualty according to its Types

In case of passenger ship, collision, engine damage, stranding and fire explosion in this rank have occurred as seen on the <table 3> and <table 4>, and marine accidents except for collision accident are inclined to reduce according to change of years. In case of freight ship and oiler, collision, wrecking, engine damage, touch in this rank have occurred, and rate of collision accident occurrence has fallen to the minimum in 2000 and increases again. Also because collision, sinking, stranding and engine in this rank have occurred .in case of towboats most of which are not subjected to ISM Code and marine accidents through collision and stranding have increased markedly recently, the remedy establishment for safety navigation supervision over towboat is needed seriously.

<Table 3> Occurrence Situation of Marine Casualty according to its Types(I)

(unit: vessels)

accident type		collision	touch	stranding	overturning	fire explosion	sinking	engine damage	shipwreck	injury and death	others	total
use	year											
passenger ship	1994	9	1	5	-	1	-	7	1	1	-	25
	1995	6	1	-	-	2	-	4	2	1	4	20
	1996	9	-	1	1	1	-	4	-	3	1	20
	1997	6	-	1	-	2	-	3	3	1	5	21
	1998	4	1	3	-	-	-	3	-	1	1	13
	1999	4	-	-	-	1	-	5	-	2	3	15
	2000	4	1	3	-	2	1	2	-	-	2	15
	2001	6	-	1	1	4	-	1	-	-	-	15
	2002	4	5	2	-	-	-	1	-	-	1	13
2003	7	-	1	-	-	-	-	-	2	-	13	
freight ship	1994	71	17	16	2	4	4	5	2	1	1	123
	1995	96	3	16	-	1	4	6	2	4	5	137
	1996	79	4	10	-	2	2	1	1	-	2	101
	1997	82	4	7	2	3	1	3	1	1	5	109
	1998	42	1	9	1	1	6	3	4	-	6	73
	1999	63	1	14	4	2	-	6	1	-	6	97
	2000	63	4	6	-	5	1	7	-	3	4	93
	2001	81	7	5	1	3	6	3	3	3	4	116
	2002	105	2	14	-	2	2	4	1	-	2	132
2003	91	6	10	1	1	1	3	1	5	1	120	
oiler	1994	32	2	8	-	5	-	-	1	1	1	50
	1995	27	1	10	1	3	2	3	2	-	1	50
	1996	40	3	4	-	3	-	1	1	1	1	54
	1997	17	2	13	1	5	-	2	1	-	1	42
	1998	23	2	3	-	2	1	1	1	1	-	34
	1999	17	-	1	-	1	-	2	-	-	3	24
	2000	12	-	1	-	-	-	-	1	-	-	14
	2001	15	1	2	-	3	-	2	-	-	-	23
	2002	13	1	1	-	-	-	-	-	1	1	17
2003	21	1	3	-	1	1	-	-	1	-	28	
fishing ship	1994	153	1	39	9	49	79	146	60	2	42	580
	1995	177	3	34	15	42	60	167	37	1	42	578
	1996	173	7	43	12	35	47	146	13	10	91	577
	1997	211	1	57	10	58	85	222	37	1	77	759
	1998	172	-	50	8	63	58	228	39	6	76	700
	1999	203	-	49	19	58	76	250	19	8	99	781
	2000	259	3	42	13	40	57	186	21	15	61	586
	2001	154	3	41	18	57	55	126	19	13	51	537
	2002	209	3	35	24	39	46	101	15	16	21	509
2003	198	-	42	20	65	39	50	16	30	22	483	

<Table 4> Occurrence Situation of Marine Casualty according to the Use of Vessels and Accident Types(2)

(unit: vessels)

accident type		collision	touch	strand- ing	over- turning	fire explos- ion	sink- in g	engine damage	ship- wreck	injury and death	others	total	
use	year												
tow- boat	1994	18	1	9	2		4	2			1	37	
	1995	14	1	4			5	5	3		4	36	
	1996	9	2	2	3		3	2	1		1	23	
	1997	6	1	2	1	1	4	4	1	2	1	23	
	1998	4	1	6			2	10	2	2		1	28
	1999	13	1	2	3	4	8	5	2	1	2	2	41
	2000	13		2	3	2	2	1	1			1	25
	2001	15	3	4	1	1	8	2	2	2	2	4	40
	2002	23	1	6	2		8	1	1	2	2	2	46
	2003	23	2	7			2	10		1		4	51
others	1994	34	1	3	3	2	6	2	2			53	
	1995	55	2	9	2	2	6	4	3	2	5	90	
	1996	37	4	7	5		4	5	2	1	4	69	
	1997	43	1	5	2	2	9	2	4	1	4	73	
	1998	50	3	6	5	1	12	5	2		4	88	
	1999	56		3	3	1	11	1	2	3	3	83	
	2000	30	3	5	4		4			1		47	
	2001	22	3	10	1		8	1	1	1	3	50	
	2002	32	1	7	6	2	4	3	1	1	1	58	
	2003	46		9	1	2	3	3	3	4	4	75	
total	1994	317	23	80	16	61	93	162	66	5	45	868	
	1995	375	11	73	18	50	77	189	49	8	61	911	
	1996	347	20	67	21	41	56	159	18	15	100	844	
	1997	365	9	85	16	71	99	236	47	6	93	1,027	
	1998	295	8	77	14	69	87	242	48	8	88	936	
	1999	356	2	69	29	67	95	269	24	14	116	1,041	
	2000	270	11	59	20	49	65	196	23	19	68	780	
	2001	293	17	63	22	68	77	135	25	17	62	779	
	2002	387	13	65	32	43	60	110	18	20	28	775	
	2003	387	9	72	22	71	54	57	21	44	31	767	

③ Analysis and Investigation of Marine Casualty Statistics

The statistics output of marine casualty in Korea is made by a judge for marine safety and Korea Coast Guard, and there is a great difference between control of the judge and control of Korea Coast Guard in that while the former includes the sum of all cases informed of from the

institutes that have received marine casualty, the latter includes only the case recognized and received by Korea Coast Guard. Because the accident in one certain marine territory doesn't occur so frequently, though the danger in one certain marine territory can be appear as accident occurrence probability and its result, the statistics material over many years is need in order to obtain accident cases possessing a certain meaning in terms of statistics. But long-term statistics on marine casualty has difficulty in representing the danger of marine casualty in the future because of the improvement of sea lane mark, transportation trend and its density change, dredging and water square change, practice of VTS and strength of enforcement administration. On the other hand, it is difficult to trust short-term statistics, since the number of accident is too small.

Two third of marine accidents occur in open port and around its marine territory where transportation density is so high, and especially the marine accidents increase in Incheon Harbor, entry waterway and Busan-Geo Je water territory etc.

The occurrence rate of marine casualty brought by small ships less than 100 tons rises occupying 57% of proportion, but that of mid-big ships more than 10,000 tons decreases steadily.

Surveyed according to the reason of marine casualty, navigation fault occupies 64.9% of the rate and in case of collision it occupies 93.7%, and most of them occurred inter harbor and coastal territory, between fishing ship and commercial one, and from at am 4 at dawn to am 8 in the morning.

The marine casualty through personal fault if this navigation fault includes work supervision fault, maintenance check badness and supervisor's fault, occupies about 76.9% out of the reasons of total marine casualty.

If the occurrence situation according to ship types is surveyed, the rate of fishing ship is the highest(65.7%), that of freight ship 14.3% and that of oiler 5.8%. But in case of the occurrence rate of marine casualty in comparison to the registered number of vessels, that of commercial ship is 5.36% and that of fishing is 6.3%.

If we examine the occurrence situation according to accident types, the rate of marine casualty through collision and stranding comes to 47.2%, and that of engine damage 19.8% and that of sinking is 9.4%. In case of fishing ship, the rate of accident through engine damage is high relatively(27%), and accident of non-fishing ship occurs mostly through collision and stranding(70%).

If we examine the occurrence situation according to the reasons of accidents, the marine casualty through personal fault occupies 77.6% out of total accidents, and the accidents through

navigation fault chiefly result from not conforming of the collision prevention rules, vigilance negligence, inappropriate vessels technique, and inappropriate reaction toward marine and weather conditions.

### **3. International Law and National Law System on Marine Casualty**

National law on prevention and rescue of marine casualty mostly on the basis of international law develops a very characteristic legislative form. Basically, agreement on international marine disaster rescue centering around UN agreement on marine law forms the basis of the law on disaster rescue, and the rule on international marine collision forms the basis of the law on marine transportation safety. And agreement on international person life safety, agreement on international load line, international agreement for container and agreement on international safety supervision form the legislative basis of law on vessels safety, and agreement on international marine pollution prevention forms the legislative basis of law on marine environments supervision.

## **III. Legislative Investigation of Disaster Administrative Law on Marine Casualty**

### **1. Rescue Law on Marine Disaster**

Water disaster rescue can be defined as searching and rescue of the ship-wrecked man, wrecked ship and airplane, and as the national disaster supervision system on protection and supervision and post management of the rescued man and ship and his or its belongings.

### **2. Marine Transportation Safety Law**

#### **1) Legislative Status of Marine Transportation Safety Law on Disaster Prevention Administrative Law**

Marine transportation safety law is a basic law of marine transportation and transportation police law for safety and order maintenance of vessels, which is applied to all the vessels on the territorial waters and inland waters where Korean sovereign jurisdiction is extended over them and those on the marine territory out of open sea and inland waters. Maritime police has enforcement right and detention of a ship, command right of return cruise and petrol duty if

necessary over vessels transporting dangerous materials.

## 2) Application Range of Marine Transportation Safety Law

Marine transportation safety law is to secure the safety of marine transportation by protecting all dangers of vessel navigation happening on marine and eliminating all the obstacles.(Article 1)

Marine transportation safety law is a law which is applied to the vessels on territorial waters and possessing Korean nationality prior to international rules. Article 3 clause 1 on marine transportation safety law sets the applied range where all the vessels on territorial and inland waters and Korean vessels on the marine territory out of open sea and inland waters are true of this law.

Marine transportation safety law is one that they have to conform when Korean vessels meet with each other not only on territorial waters but also open sea. Even in case of collision between Korean ship and foreign ship, Marine transportation safety law becomes a basis law. (article 61 clause 1, private international law). By contrast, when Korean ship and foreign ship collide on open sea, marine transportation safety law of the vessel having done to harm becomes a basis law(article 61 clause, private international law).

Because it states that the rivers where vessels navigating on a sea can not navigate any longer are excluded, marine transportation safety law is not applied to Han-River or Choong Ju Lake like the case of international rules.

## 3. Opening Port Order Law

### 1) Status of Opening Port Order Law on Disaster Prevention Administrative Law

Opening port order law has a feature of special law of marine transportation safety law for vessel transportation within navigation limit line and safety and order maintenance, and is a sort of marine transportation law governed by Regional Maritime Affaires and Port Office.

Because it is very probable that there can be the danger of marine accident within navigation limit line where many vessels navigate very frequently, I consider a brief argument as carrying a fruitful meaning in terms of danger.

### 2) Legislative Purpose of Opening Port Order law and its Relation to Marine Transportation Safety Law

Opening port order law aims at safety maintenance and vessel transportation order within navigation limit line. Because chapter 3 on opening port order law is a law for the purpose of maintaining vessel transportation order, it has a special law status over marine transportation safety law(article 4, marine transportation safety law).

The applied range of opening port order law includes applied water surface and applied vessel. Article 1 on opening port order law states that it prescribes the purpose of maintaining the order of vessel transportation within navigation limit line of opening port. Therefore, not opening port order law but marine transportation safety law or international rule is applied outer navigation limit line of opening port. Opening port and its range are prescribed in article 2. The number ports of Korean opening port comes to 28 such as Busan Port, Incheon Port, Mokpo Port, Pohang Port and Taean Port etc.

Because opening port order law has a status of special law over marine transportation safety law, opening port order law is applied to prior to marine transportation safety law when there is a conflict between two laws, and in case of the regulations without opening port order law, the regulations of marine transportation safety law supplementarily.

#### **4. Marine Environments Supervision Law**

##### **1) Status of Marine Environments Supervision Law on Disaster Prevention Administrative Law**

Sea Prince Disaster on front sea in Yeosu and Hebei Spirit Accident in Taean have instructed that huge marine pollution can occur through marine casualty and hull construction, marine pollution prevention facility and settlement are very important items.

It is very important for examine marine environments supervision law, a basis law under the condition that many marine pollution disasters still happen frequently in Korea where we have experienced extra-large marine pollution disasters twice.

##### **2) Legislation Process of Marine Environments Supervision Law and its Composition System**

A domestic legislation of MARPOL is marine environments supervision law as that is corrected on 8th March 1991 as a law number 4,365. This law is to protect health and wealth of national people by regulating waste oil, harmful liquid materials and waste matters emitted from vessels

and marine facilities, and by eliminating pollutants and preserving marine environments(article 1).

## 5. Vessel Safety Law

### 1) Status of Vessel Safety Law on Disaster Prevention Administrative Law

The Titanic, extra-luxury ship collided with an iceberg during the first navigation 1912 and 1,502 passengers died along with the sunken ship. the importance of all the arrangement over vessel safety has risen taking this opportunity, and the recognition that the problem of vessel safety must not be in charge of civil personnels was spread. Agreement on SOLAS of IMO resulted from such recognition.

Vessel safety law applied only to Korean vessels in general can be called a marine affaires administrative law. Consequently it is possible to explain vessel safety law by legal principles of collection of treaties in administrative law, and this law prescribes rules on practical effect security, and so it prescribes rules to regulate ship owner, captain and concerned vessel itself by giving vessel inspection system, visit of inspection system and navigation suspension disposal to marine transportation office.

### 2) Applied Range of Vessel Safety Law

Because the rule on application range in vessel safety law is not prescribed separately, it can be interpreted that it is applied to all the vessels by vessel law, and the range of vessel excluded from the application according to rules is settled separately. Therefore big difference between vessel safety and agreement on SOLAS consists in that the latter is applied to only vessels engaged in international navigation, and freight ship, floating ship and sightseeing boat are excluded, but they are in the application range in the former.

## IV. Conclusion

As seen in analysis of Hebei Spirit disaster having occurred on the front sea in Taean, December 2007, marine casualty in general occurs in the unexpected moment and once it occurs, it is hard to expect a rapid and effective rescue unlike land disaster. As the spot of marine

casualty is very variable because of climate and sea wave, it is hard to preserve the spot, and it is exposed to natural dangers like typhoon and storm all the time. Maritime police is on duty of rescue to protect seamen's life and wealth being ship-wrecked in this danger according to basic law on disaster and safety supervision and marine disaster relief law. Navy also performs its duty of rescue excluded special occasions like military operations according to support request.

It is necessary to considerate more effective prevention policy to secure the safety of marine transportation and to prevent marine casualty, and so enforcement function of maritime police must be reinforced in order to secure the effectiveness and to coerce its conformity. For example because small vessels which navigate in disregard of navigation methods for them to conform, can lead to big dangers over vessels navigation, more proper enforcement and punishment are needed for prevention of accident.

Also it is necessary to take legal actions in order to exercise a powerful government power over the negligence of man on duty in steering house depending on automatic navigation system.

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**文炫喆:** 조선대학교에서 법학박사 학위를 취득하고(논문: 방재행정법의 체계화에 관한 연구, 2001), 현재 초당대학교 군사학과에 재직 중이다. 주요 경력으로는 국회 입법 자문위원, 행정안전부 정책자문위원, 서울특별시 매뉴얼 자문위원, 국립방재교육원 표준교재 편찬위원회 위원 등이다. 주요 관심분야는 공법학, 방재행정법, 재난관리 등이다. 주요 논문으로는 “군사행정법상 민방위사태에 있어서 민관군 통합방위체제에 대한 연구(2007)”, “재난방재행정에서 검찰의 역할에 관한 연구(2007)” 등이 있다(mnhncl@hanmail.net).