

**Experts Meeting on Preparedness and
Response to Pollution Incidents
by Hazardous and Noxious Substances**

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**China's Strategy and Resources
for Emergency
Response to HNS Accidents**

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Presentation

- I. Introduction
- II. Status of HNS Carriage at Sea along the Chinese Coast
- III. General Description of HNS Incidents
- IV. China's Laws and Legislation
- V. Policy and Strategy of the Chinese Government
- VI. Conclusion

I. Introduction

This presentation briefly introduces the status of HNS carriage at sea along the Chinese coast; and generally describes HNS accidents; China's policy and Legislation and the measures taken by the Chinese Government. The purpose of this presentation at this meeting is to give participants a picture of China's strategy and resources for emergency response to HNS accidents.

II. Status of HNS Carriage at Sea along the Chinese Coast

- 1. Chemical terminals**
- 2. Quantity of HNS transported**
- 3. Chemical tankers**

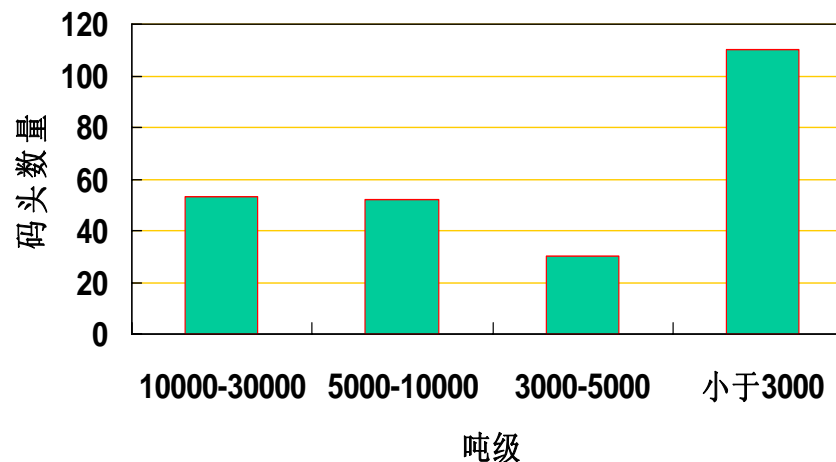
1. Chemical Terminals (from 2000 to 2001)

Terminal Class (Tons)	No. of Terminals	Terminal Percentage (%)	Stowage Capacity (m3)	Stowage Capacity (%)
<300	18	7.30%	222168	3.30%
300-499	16	6.50%	12070	0.20%
500-999	23	9.40%	110069	1.70%
1000-1499	16	6.50%	204983	3.10%
1500-2999	11	4.50%	355000	5.30%
3000-4999	30	12.20%	239860	3.60%
5000-9999	52	21.20%	1608780	24.20%
10000-29999	53	21.60%	2082000	31.30%
>=30000	26	10.60%	1819600	27.30%
Total	245	100.00%	6654530	100.00%

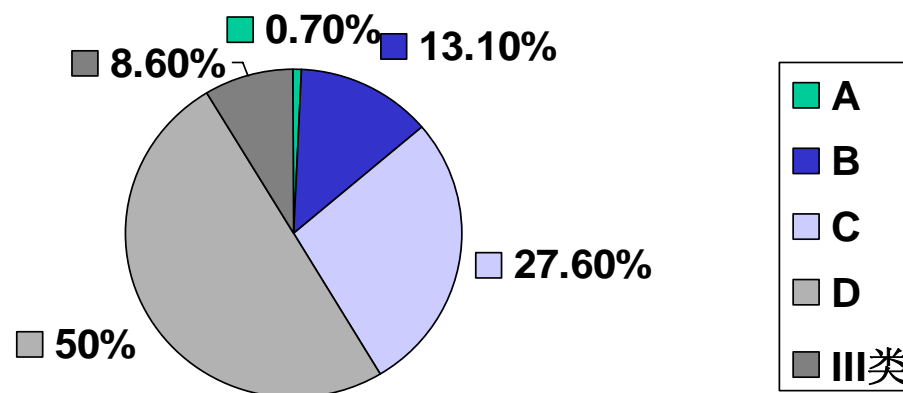
Distribution of chemical terminals (2000-2001)

- Totally 245 chemical terminals along the Chinese coast
- Total stowage capacity: about 6.655million tons
- 130 chemicals involved in transport

散化码头吨级分布



HNS物质分类分布



2. Amount of transport

- **The amount of HNS transport in the country during 15 years of 1989-2004 has increased by 30 times and the kinds of chemicals increased by 3 times ;**
- **The transport of HNS of year 2004 was 47 million tons, of which 37million tons were handled in port ;**
- **Main categories: vegetable oil, ethylene glycol, methyl alcohol, styrene, sulphuric acid, xylene, toluene and its mixtures, sodium hydroxide, ethylene dichloride, etc.**

Amount of Dangerous Goods transported (including HNS) in 2004

		Entering Ports				Departure from Ports				Transit (tons)
		No. of Vessel		Substances (tons)		No. of Vessel		Substances (tons)		
		Dom. Voyage	Intl. Voyage	Dom. Trade	Intl. Trade	Dom. Voyage	Intl. Voyage	Dom. Trade	Intl. Trade	
Total		127,737	72,429	165,322,374	200,234,990	180,299	40,316	177,646,751	20,210,066	25,062,898
Packaged Cargoes		8,412	27,440	913,067	4,062,289	11,341	22,772	2,018,454	3,707,621	6,654,567
Solid Substance in Bulk		1,118	443	930,091	5,351,531	6,043	610	1,719,512	2,456,292	730,857
Noxious Liquid		13,896	33,952	8,045,247	29,093,546	29,740	4,636	8,834,549	1,229,052	10,405,426
Liquefied Gases		4,075	1,325	3,159,373	7,431,797	4,019	69	3,185,528	58,077	1,611,963
Oil in Bulk	FP<28 ° C	19,877	398	50,070,679	36,187,954	22,650	445	36,507,724	7,198,241	1,411,176
	FP≥ 28-60°C	15,110	6,379	35,967,146	78,945,723	12,951	746	47,683,279	995,136	2,511,727
	FP≥ 60 ° C	65,179	2,492	66,236,771	39,162,150	93,555	11,038	77,697,705	4,565,647	1,737,192

Amount of Dangerous Goods Controlled And Inspected by MSAs in 2004

MSAs	Entering Ports				Departure from Ports				Transit (Tons)
	No. of Vessels		Substances (Tons)		No. of Vessels		Substances (Tons)		
	Domestic Voyage	Intl. Voyage	Domestic Trade	Foreign Trade	Domestic Voyage	Intl. Voyage	Domestic Trade	Foreign Trade	
Total	127, 737	72, 429	165, 322, 374	200, 234, 990	180, 299	40, 316	177, 646, 751	20, 210, 066	25, 062, 898
Liaoning	550	1, 922	6, 186, 101	22, 150, 065	7, 138	1, 823	30, 860, 905	5, 477, 643	825, 342
Hebei	412	144	1, 672, 165	827, 515	752	191	3, 453, 051	330, 849	13, 059
Tianjin	1, 030	3, 133	5, 946, 557	8, 539, 988	888	2, 308	5, 263, 393	2, 440, 226	1, 202, 024
Shandong	3, 050	3, 034	6, 272, 174	27, 747, 446	1, 783	2, 597	6, 405, 189	604, 152	1, 805, 591
Jiansu	15, 140	5, 827	30, 063, 872	16, 088, 976	47, 015	1, 603	32, 368, 205	1, 087, 420	3, 692, 811
Shanghai	8, 356	8, 503	12, 766, 531	7, 456, 989	28, 060	8, 215	12, 743, 647	2, 131, 215	1, 983, 716
Zhejiang	10, 737	2, 881	23, 476, 829	49, 214, 577	15, 522	1, 346	42, 934, 106	1, 247, 734	6, 925, 224
Fujian	4, 332	2, 688	6, 785, 688	6, 408, 606	2, 725	896	3, 106, 603	579, 913	895, 848
Guangdong	66, 359	42, 343	43, 821, 667	54, 469, 408	58, 630	20, 022	31, 474, 762	2, 768, 263	2, 028, 389
Shenzhen	3, 923	1, 549	7, 544, 710	4, 465, 151	2, 014	389	1, 143, 554	3, 273, 658	5, 417, 855
Hainan	1, 062	150	1, 435, 655	182, 041	470	-	323, 962	-	20, 772
Guangxi	1, 656	224	1, 490, 755	2, 583, 800	6, 056	920	2, 491, 778	214, 622	41, 558
Changjiang	10, 970	31	17, 784, 498	100, 428	9, 020	6	4, 995, 661	54, 371	210, 709
Heilongjiang	160	-	75, 172	-	226	-	81, 935	-	-

3. Chemical Tankers (2001-2002)

Voyage	No. of Vessels	Average Age	Average Gross Tonnage
International	27	14.6	3,846
Coastal	62	16.9	726
Inland Water	148	9.9	212

III. General Description of HNS Incidents

- Totally 52 Incidents involving HNS took place during 1991-2004, of which, 14 incidents with spill over 100 tons
- Most pollution incidents were due to operational accidents.
- Only a few incidents were due to severe sea condition.
- ∴ With the increase of the HNS transportation, the risks also increases.

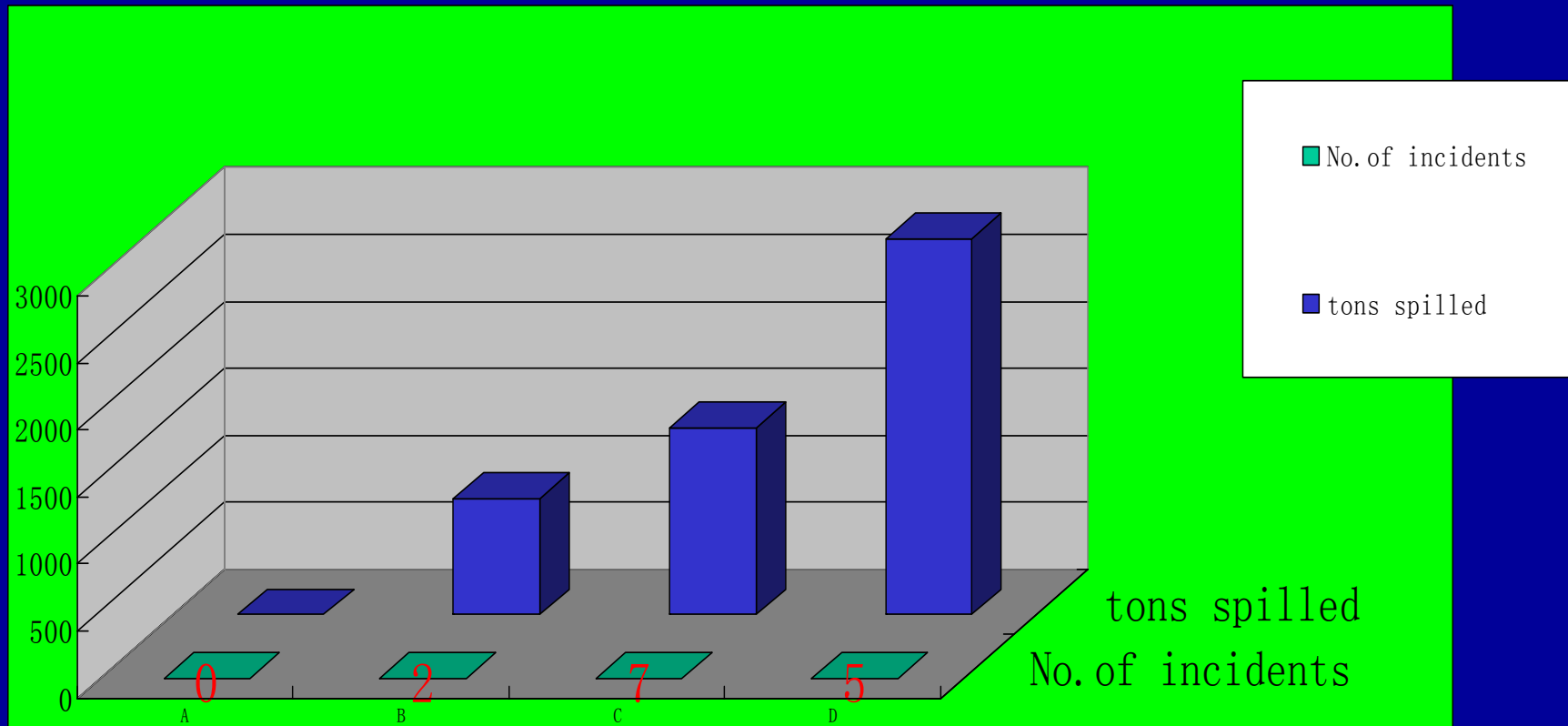
III. General Description of HNS Incidents (continued)

- Incidents spilled more than 100 tons
(from 1991 to 2004)

Substances	No. of incidents	Spilled (tons)	Contamination Category
Cinnamene/styrene	2	868	B
Vitriol /sulphuric acid	6	1241	C
Benzene	1	149	C
Animal/vegetable oil	1	200	D
Bydrochloric acid	2	2135	D
Liquid alkali	1	240	D
Cymene crylic acid	1	225.4	D
TOTAL	14	5058.4	

III. General Description of HNS Incidents (continued)

- Incidents spilled more than 100 tons



IV. China's Laws and Legislation

1. Laws

- **The Marine Environmental Protection Law of P.R.C.**
- **The Maritime Traffic Safety Law of P.R.C.**
- **The Port Law of P.R.C.**

2. Regulations

- **The Regulations of P.R.C. for Safety Management of Dangerous Chemicals**
- **The Regulations for Traffic Safety Management for Inland Waters of P.R.C.**

3. Provisions

- **Provisions for Safety Control and Management of Dangerous Goods Carried by Ships**
- **Dangerous Goods Code for Waterborne Transport**

4. Guidelines

- **Guidelines of framework for contingency plans developed and revised by the relevant Authorities of the State Council for public unexpected events;**
- **Guidelines of general framework for contingency plan developed by the Provincial (Regional or Municipal) Governments;**
- **Guidelines for Development of Shipboard Marine Pollution Contingency Plan, developed by China MSA in 2002.**

V. Policy and Strategy of the Chinese Government

1. Policy for Prevention and Control of HNS Accidents
2. Strategy for Emergency Response to HNS Accidents

1. Policy for Prevention and Control of HNS Accidents

(1) Improvement of the quality of professional personnel :

- Awareness raising of environment protection of the operational personnel
- Training and qualification of the seafarers on safety and special operation under STCW Convention, only those certified can be employed for the operation
- Safety training on the handling and management personnel

(2) Control of ships:

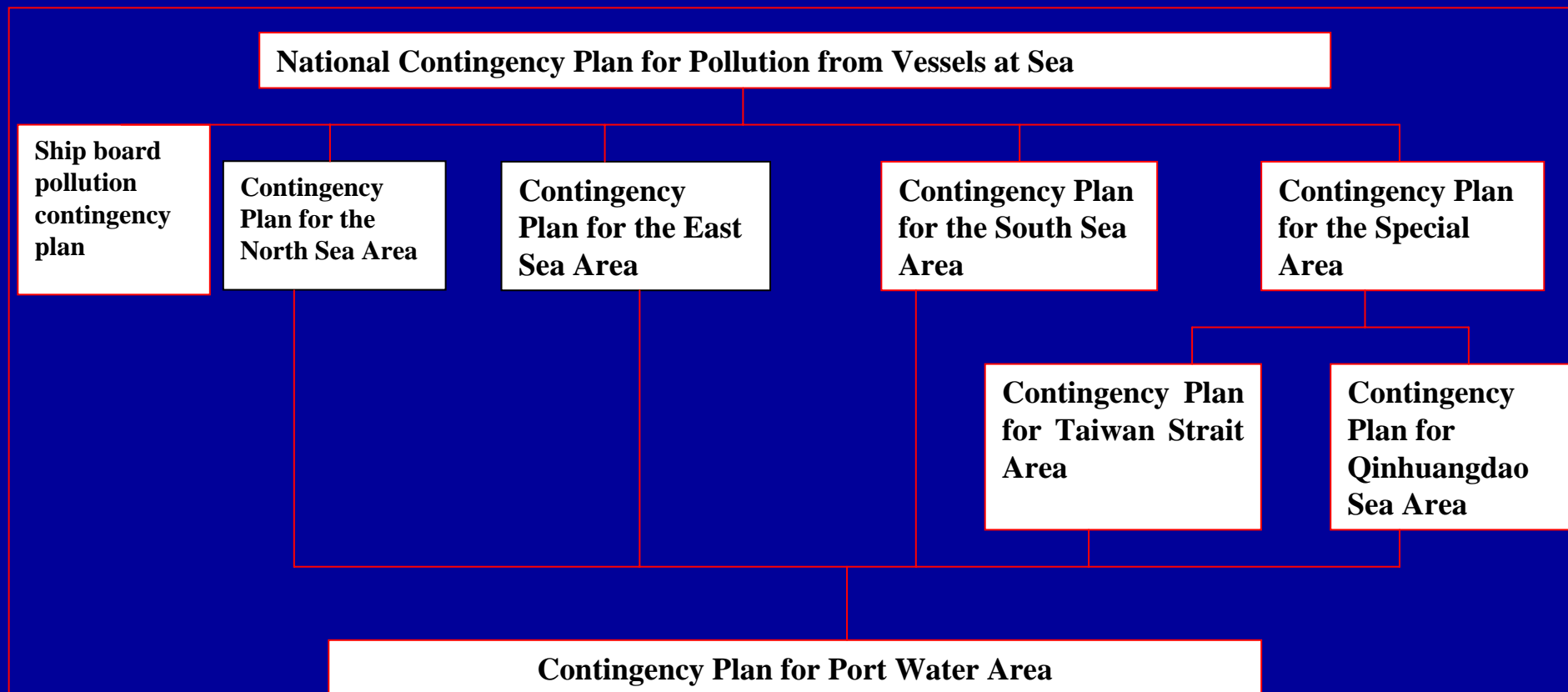
- Implementation of MARPOL 73/78, IBC/BCH, ISM Code, through ship survey, PSC/FSC, declaration and endorsement of HNS carried by ships, and other safety and pollution prevention measures;
- Implementation of approval requirements for HNS terminals and HNS handling operation, ship/shore safety checklist, and contingency plan;
- Convoy and VTS control required for some HNS ships in special water areas;
- Shipping companies required to establish safety and pollution prevention management systems according to ISM and NSM Code.

2. Strategy for Emergency Response to HNS Accidents

- (1) Emergency response system;
- (2) Resources for emergency response to HNS accidents;
- (3) Principles and procedures (tactics) for emergency response to HNS accidents;
- (4) Human resources for emergency response after HNS accidents;
- (5) Compensation in connection with HNS.

(1) Emergency Response System

- National Contingency Plan for HNS Spills from Vessels at Sea



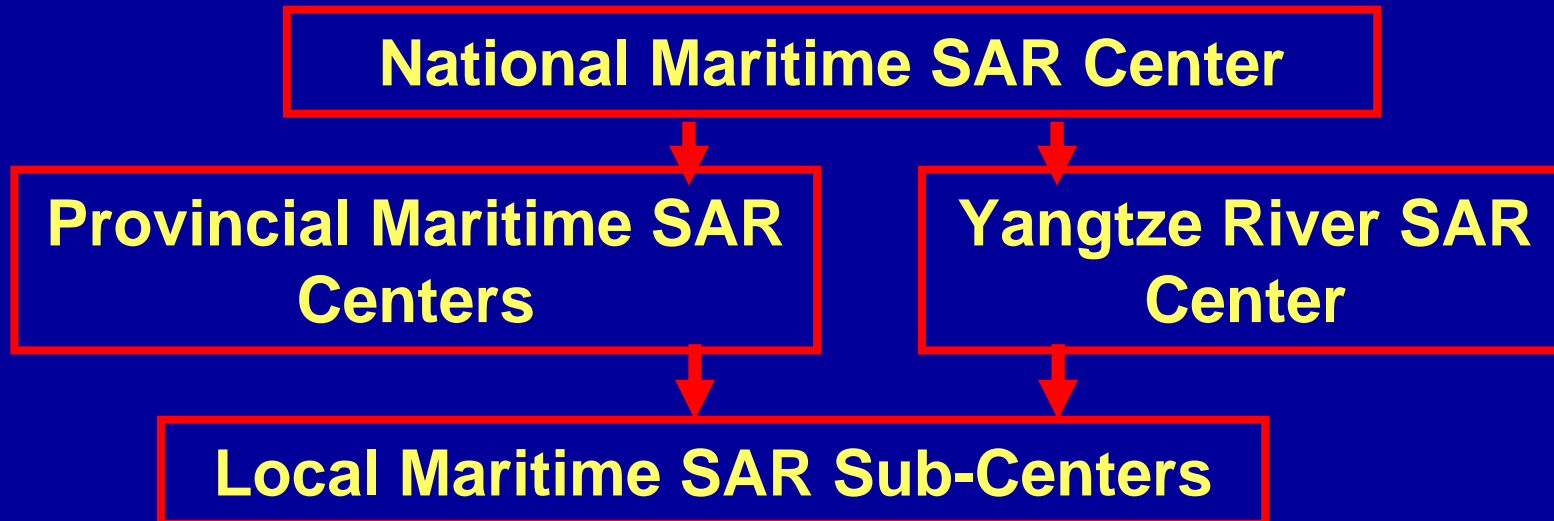
(1) Emergency Response System (cont.)

In 2004, China MSA revised the Marine Pollution Contingency Plan for Ship's Oil Spill into the National Contingency Plan against Pollution from Ships (to be promulgated), which includes the emergency response to HNS incidents. Now, a four-level HNS contingency plan is formulated, consisting of national, provincial, local and port and shipboard contingency plans.



(2) Resources for emergency response to HNS accidents

- HNS is an important part of the maritime emergency response.
- The search and rescue system is shown as follows.
- Three Search and Rescue Authorities are established for Northern, Eastern and Southern Seas



(2) Resources for emergency response to HNS accidents (cont.)

Technical support:

- Dalian HNS Transport Research Center
- Experts Supporting System for Emergency Response, established by China MSA and its Provincial MSAs

(2) Resources for emergency response to HNS accidents (continued)

Emergency response force:

- China's HNS emergency response is mainly done by professional teams
 - National Contingency Supporting Center for Chemical Incidents (National Chemical Registration Center)
 - Special Firefighting Brigade and local anti-chemical warfare forces
 - Professional contingency teams of the chemical enterprises
 - Environment protection authorities mainly undertake testing and monitoring related to the HNS incidents
 - Oceanic authorities and maritime authorities also have some responsibilities for monitoring at sea.

(2) Resources for emergency response to HNS incidents (continued)

- The equipment and materials of HNS terminals according to their contingency plan.
- The local government is responsible for evacuation if necessary

(3) Principles and procedures (tactics) for emergency response to HNS accident

Principles and procedures:

- First priority: rescue of lives, evacuation and safety of the response personnel;
- If the pollutant unknown, HNS response and monitoring procedure should apply;
- The source of danger should be controlled first to prevent further development of the incident;
- Prevent or minimize the damage to the environment, priority should be given to sensitive resources.

(3) Principles and procedures (tactics) for emergency response to HNS incidents(cont.)

Procedures of emergency response:

- Preparedness to the contingency
- Primary response
- Extended response
- Response resuming

(4) Human resources for emergency response to HNS accident

- Human resources include professional teams, volunteers and other relevant personnel;
- To a large extent, emergency response to an incident need professional teams specially trained and equipped with special equipment, especially, those for rescue, firefighting, monitoring and medical aid in a chemical-involved site;
- The maritime authorities have established contact means with the relevant authorities and organizations through the contingency plan and real response operations, and have the emergency contact points of HNS manufacturers and transport companies through dangerous goods declaration and endorsement;

(4) Human resources for emergency response to HNS accident (cont.)

- China MSA and its provincial Administrations have established expert supporting system for emergency response;
- The guarantee of human resources mainly include the training of the professional teams, volunteers and other personnel for response. China has established the professional training institute, and is carrying out shipboard HNS emergency response training for different levels.

(5) Compensation in connection with HNS

- China has attached importance to the issue of compensation related to HNS
- Studies has been carried out on the HNS Convention. The MOC has approved three programmes for study of the establishment of China's compensation mechanism for damage caused by ships other than oil tankers.
- China is considering to ratify HNS Convention or the necessity and feasibility for establishing the domestic HNS Fund.

VI. Conclusion

- 1. Safety and pollution prevention for waterborne transported HNS has become an issue of great concern for the Chinese Government, as the increase of the HNS carried by ships in the coastal waters, and risks thereof.**
- 2. China has established the legislation system for prevention of and response to HNS incidents related to ships.**
- 3. Through implementation of the relevant international conventions and national legislations, China has strengthened the quality control of the personnel involved in HNS operation, enhanced the safety and pollution control of HNS ships and terminals. All these measures will contribute to the prevention of HNS incidents.**
- 4. Combined with the establishment of the emergency response system for oil spill from ships, the four-level emergency response plan for ship's HNS incidents has been formed basically.**

VI. Conclusion (continued)

5. The main resources for response to HNS incidents include professional maritime SAR force, the National Contingency and Rescue Center for Chemical Incidents, special firefighting brigade, military anti-chemical force, and professional contingency response teams of chemical enterprises. The environment monitoring research organizations and experts provide sufficient support for HNS emergency response.
6. China's principles and procedures of HNS emergency response are relatively good and comprehensive, and implemented in the real response as mentioned above.
7. China has established the professional training institute, and is carrying out shipboard HNS emergency response training for different levels. International cooperation is needed in this field.
8. China is considering to ratify HNS Convention or the necessity and feasibility for establishing the domestic HNS Fund.

THANK YOU

