



A Comprehensive Understanding of I.S.R.P.

- For Establishing the System for the Safe
Transport of Dangerous Goods

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"The way to be safe is never to be secure"
(Benjamin Franklin)

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Strategic
Partner





Introduction - Accident I: Hyundai Fortune





Introduction - Accident I



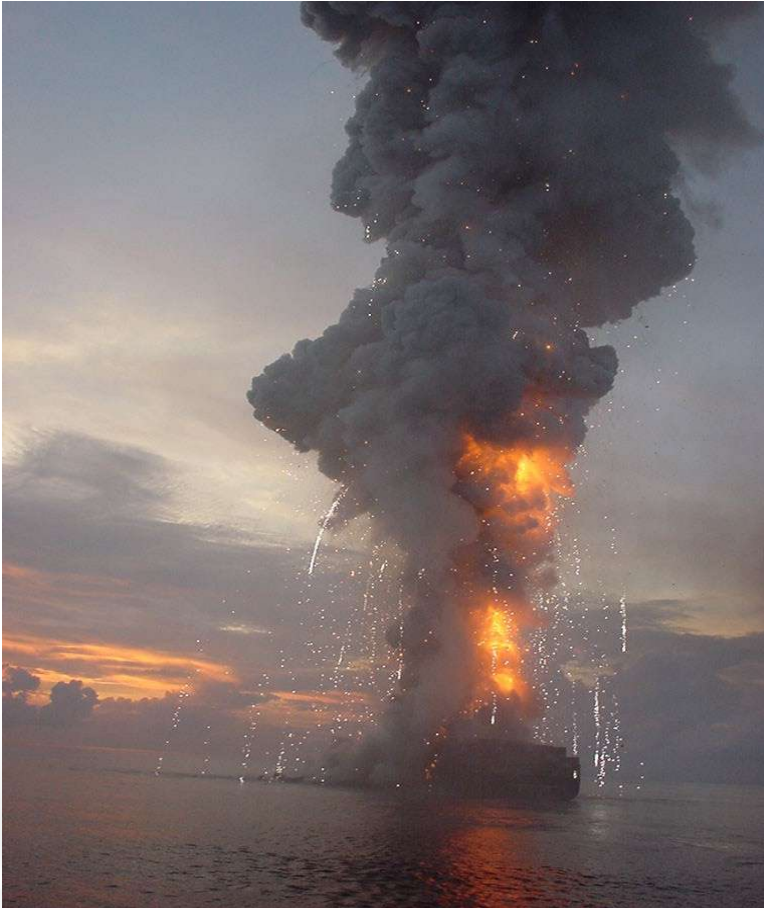


Introduction - Accident I





Introduction - Accident II Hanjin Pennsylvania





Introduction - Accident II





Introduction - Accident II





Introduction - Accident III

The Clash of ValuJet Flight 592 1996. 5. 11.

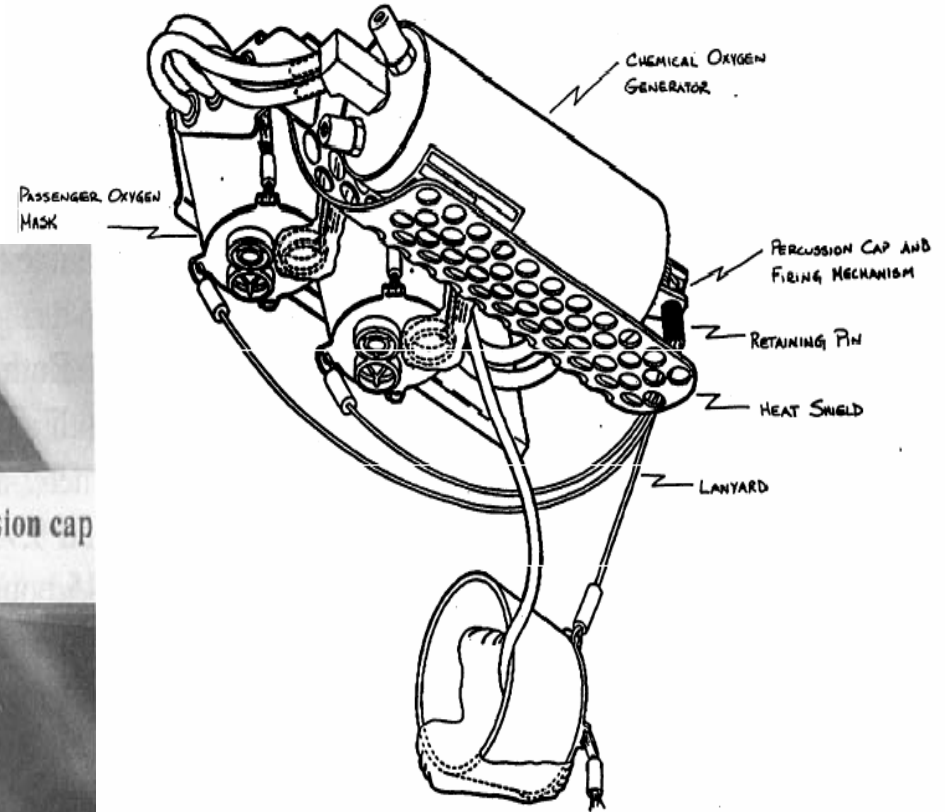
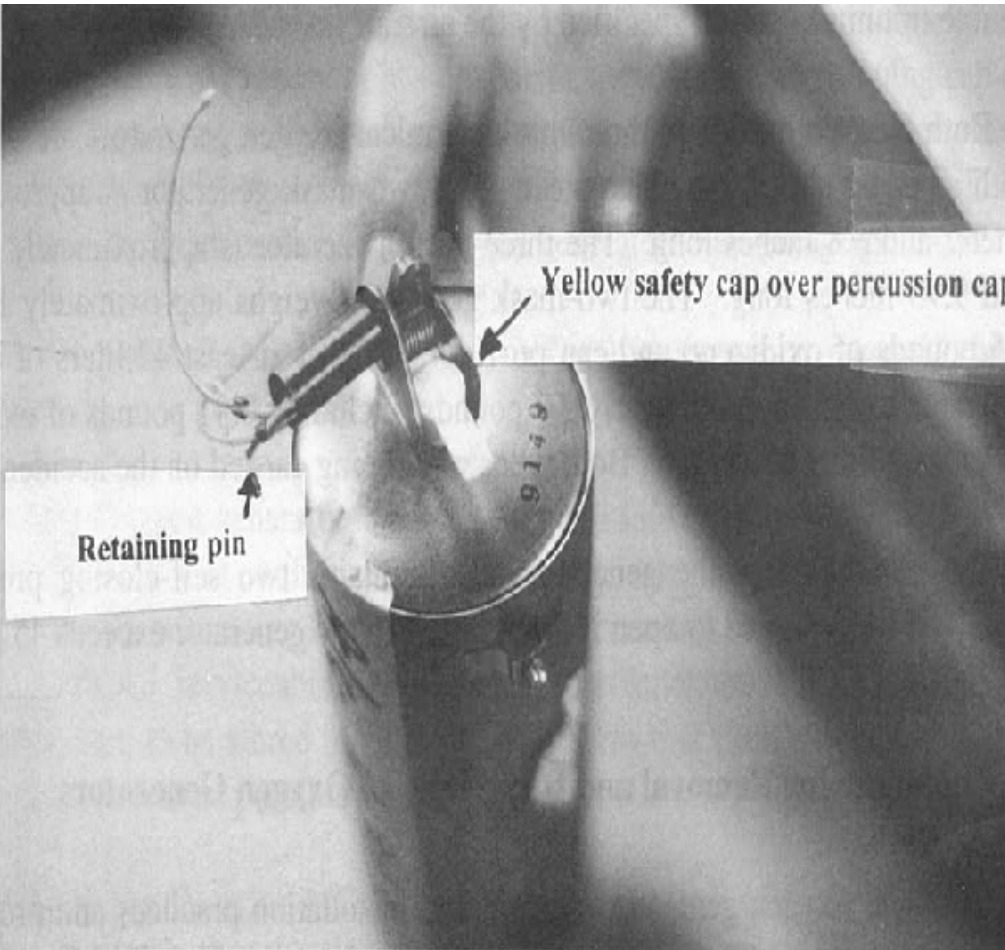
- ValuJet Flight 592 took off from Miami runway 09L at 14.04h for a flight to Atlanta. At 14.10h, while flying at 10628ft at 232kts IAS (heading 300) the altitude dropped 815ft and the IAS decreased 34kts in 3secs time. From then on, the FDR recorded intermittent data dropouts. Shortly thereafter the crew requested to return to Miami due to smoke in the cockpit. Flight 592 was vectored for a runway 12 approach. At 7207ft, descending at 260kts on a 210 heading, the FDR stopped recording. Fifty seconds later ValuJet 592 struck a swamp with the nose pitched down 75-80 and disintegrated.
- It was concluded that there had been a very intense fire in the middle of the forward cargo hold, which burned through the cabin floor at seat rows 5 and 6 on the left hand side. Investigations focus on a fire, possibly caused by oxygen generators carried in the cargo hold. The aircraft carried boxes containing 144 oxygen canisters and two MD-80 main wheel tires in the forward hold.
- PROBABLE CAUSE: "The National Transportation Safety Board determines that the probable causes of the accident, resulting in a fire in the Class D cargo compartment from the actuation of one or more oxygen generators improperly carried as cargo, were: (1) the failure of SabreTech to properly prepare, package, identify, and track unexpended chemical oxygen generators before presenting them to ValuJet for carriage; (2) the failure of ValuJet to properly oversee its contract maintenance program to ensure compliance with maintenance, maintenance training, and hazardous materials requirements and practices; and (3) the failure of Federal Aviation Administration (FAA) to require smoke detection and fire suppression systems in Class D cargo compartments. Contributing to the accident was the failure of the FAA to adequately monitor ValuJet's heavy maintenance program and responsibilities, including ValuJet's oversight of its contractors, and SabreTech's repair station certificate; the failure of the FAA to adequately respond to prior chemical oxygen generator fires with programs to address the potential hazards; and the failure of ValuJet to ensure that both ValuJet and contract maintenance employees were aware of the carrier's no-carry hazardous materials policy and had received appropriate hazardous materials training." (NTSB/AAR-97/06)

<http://www.nts.gov/publicn/1997/aar9706.pdf>



Introduction - Accident III

Oxygen Generators



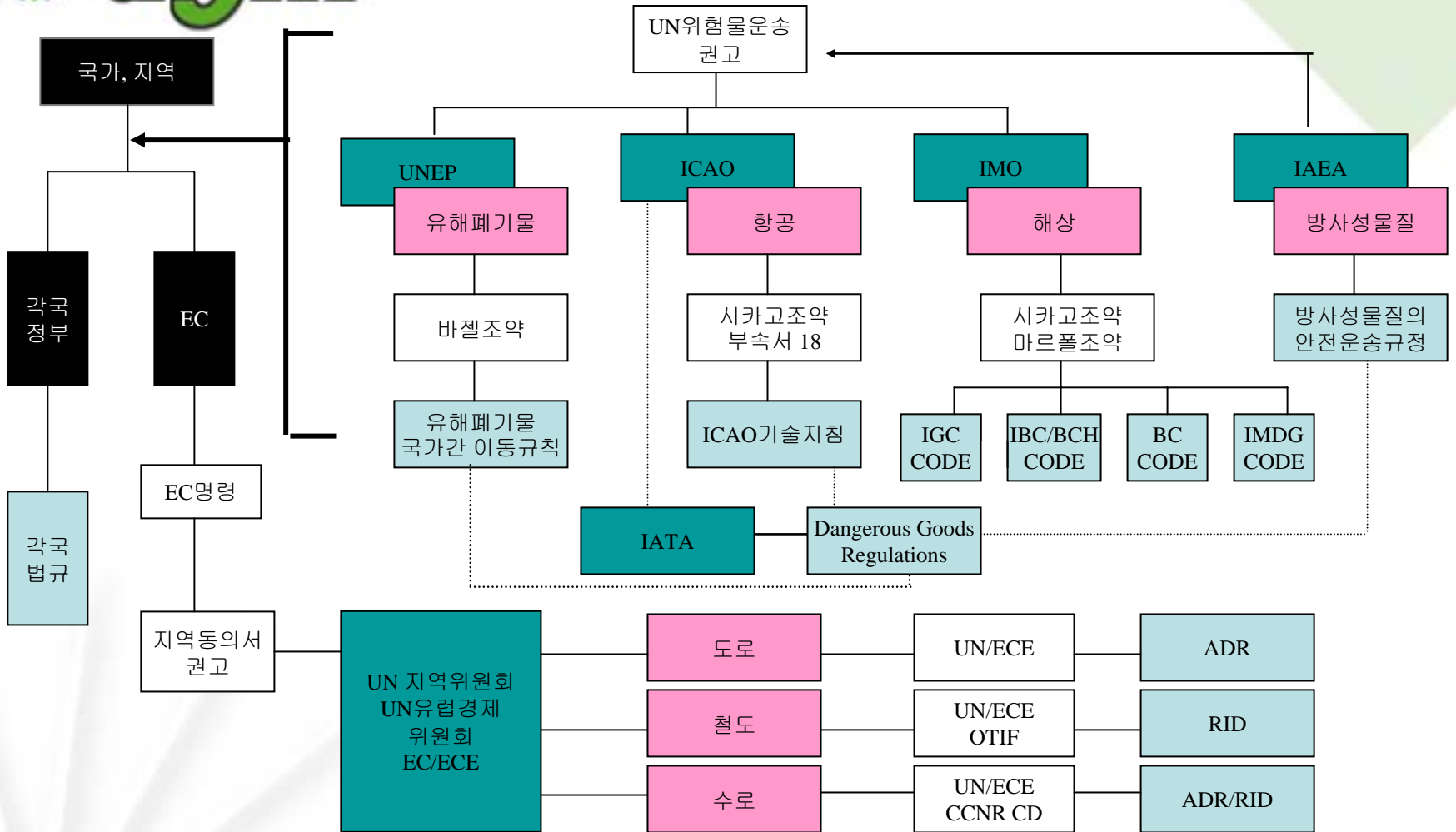


1. International Regulations – UN Model Reg.





2. International Agreement





3. Contents of Regulations.

General Provisions/Definition/Training				UN
Classification/Dangerous Goods List/Packing				
Shipper's Responsibility				
Operator's Responsibility				
Air	Road	Sea	Railroad	
Specifications for Packagings & Testing				UN
ICAO TI	ADR	IMDG Code	RID	



4. HMR –U.S. Regulations

Title 49
Transportation
Subtitle B
Other Regulations
Chapter I
PHMSA, DOT

Subchapter C
HMR
Hazardous Materials
Regulations

Subchapter D

Part 171	General Information, and Definitions		
Part 172	Table, Special Provisions, Communications, Emergency Response Information, and Training Requirements		
Part 173	Shippers General Requirements for Shipments and Packagings		
Part 174	Part 175	Part 176	Part 177
Carriage by Rail	Carriage by Aircraft	Carriage by Vessel	Carriage by Public Highway
Part 178	Specifications for Packagings		
Part 179	Specifications for Tank Cars		
Part 180	Continuing Qualification and Maintenance of Packagings		
Part 190–Part 199	Pipeline Safety		



5. Shipper's Responsibility

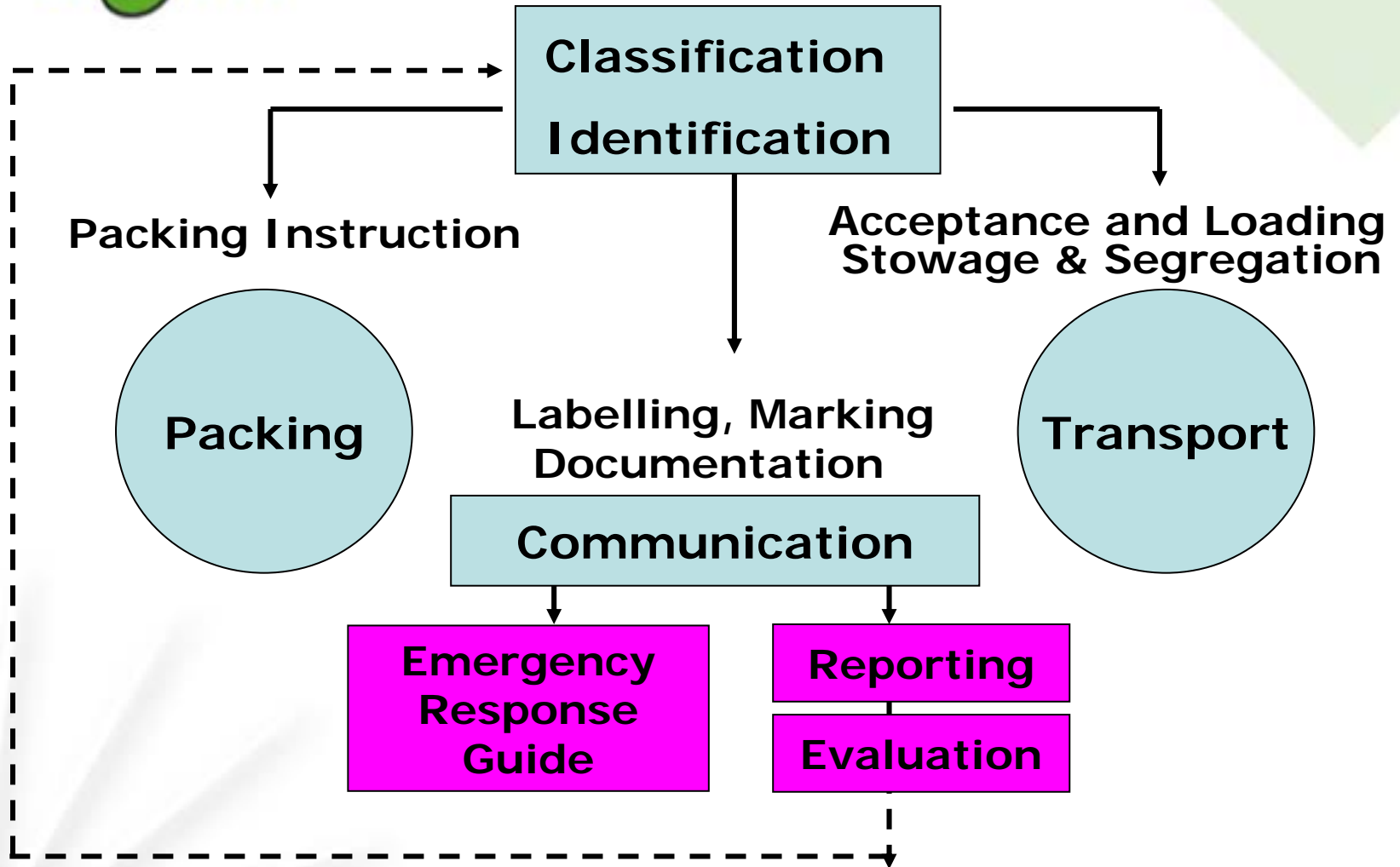
Proper

- Classification & Identification
- Marking and Labelling
- Packing
- Documentation

in a condition for transport as required by all regulations



6. The Concept of Ensuring the Safety





7. The Global Scheme

- Harmonization
 - Regional ⇒ National ⇒ International (Agreement)
 - Uni-modal ⇒ Multi-Modal Transport (UN Reg.)
 - Various Existing Systems
 - ⇒ A Comprehensive System (GHS)
- Purpose of the Harmonization
 - To enhance the protection of human health and the environment by providing an internationally comprehensible system for hazard communication;
 - To provide a recognized framework for those countries without an existing system.
 - To Facilitate international trade in chemicals whose hazards have been properly assessed and identified on an international basis.

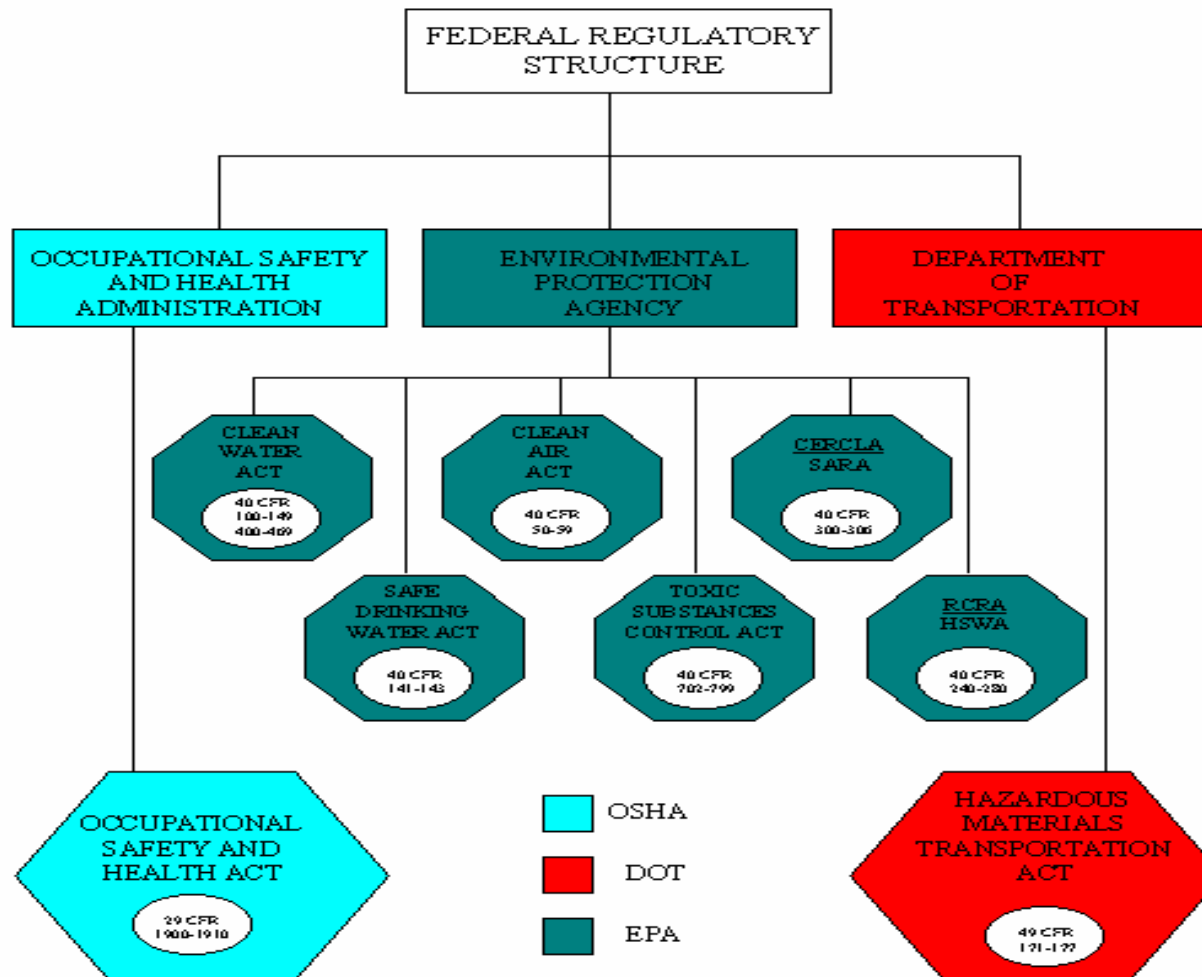


8. DG Transport Reg. in Korea

General Provisions/Definition/Training			
Classification/Dangerous Goods List/Packing			
Shipper's Responsibility			
Operator's Responsibility			
Air	Road	Sea	Railroad
Specifications for Packagings & Testing			
항공법		선박안전법	

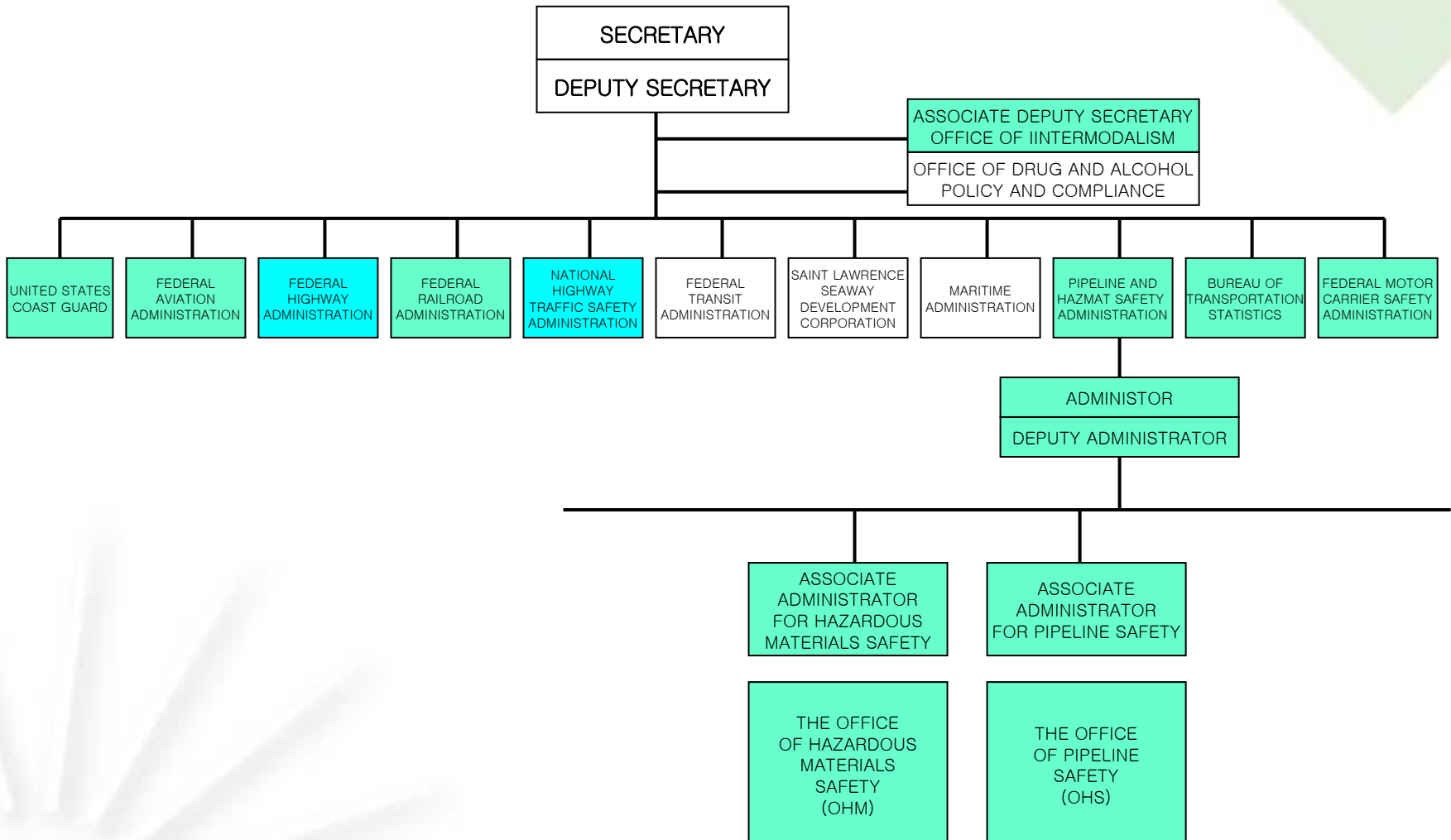


9. DG(HM) Reg. – U.S.





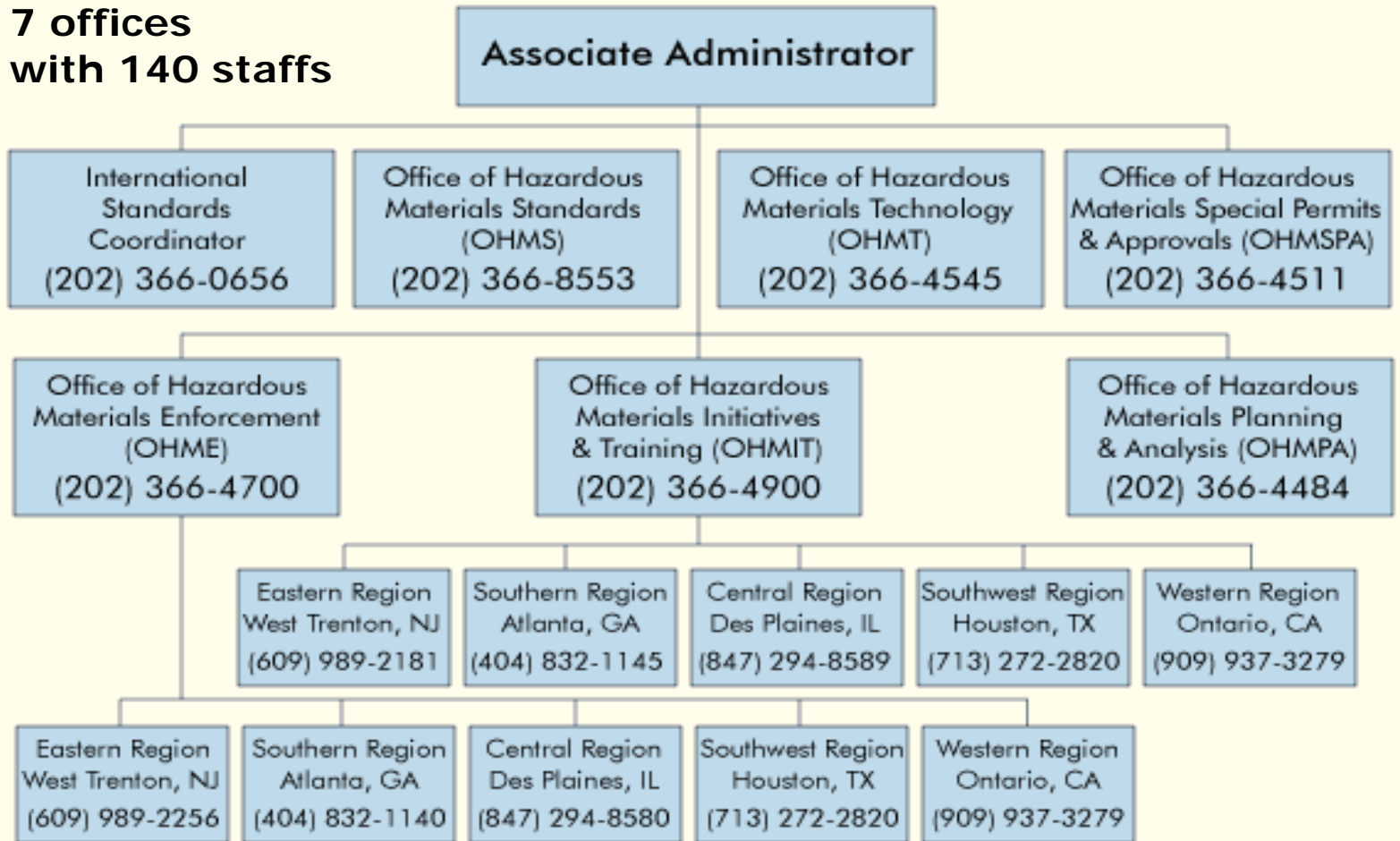
10. Enforcement & Organization -U.S. DOT





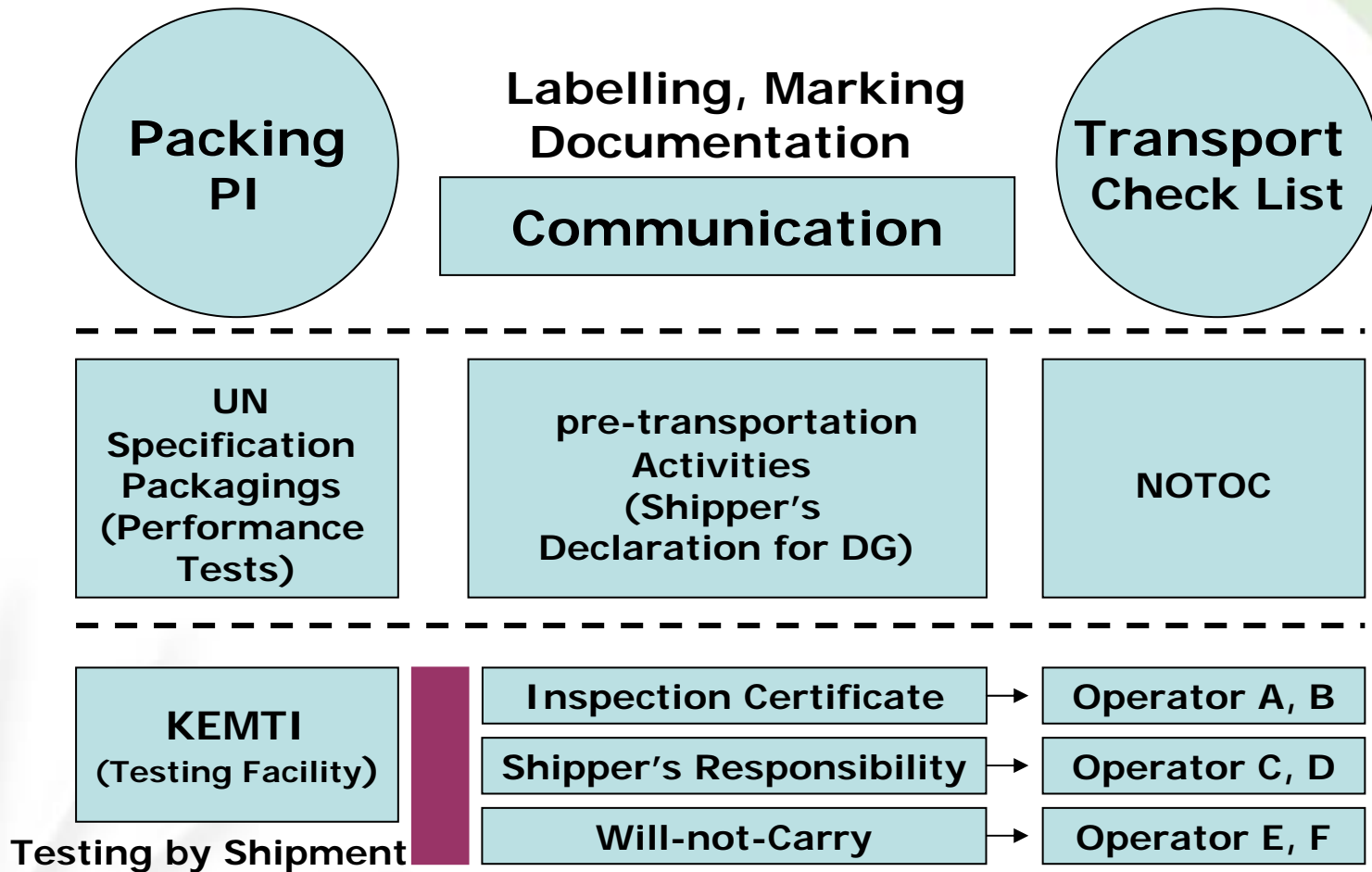
10. Enforcement & Organization Office of HM Safety -U.S. DOT

7 offices
with 140 staffs



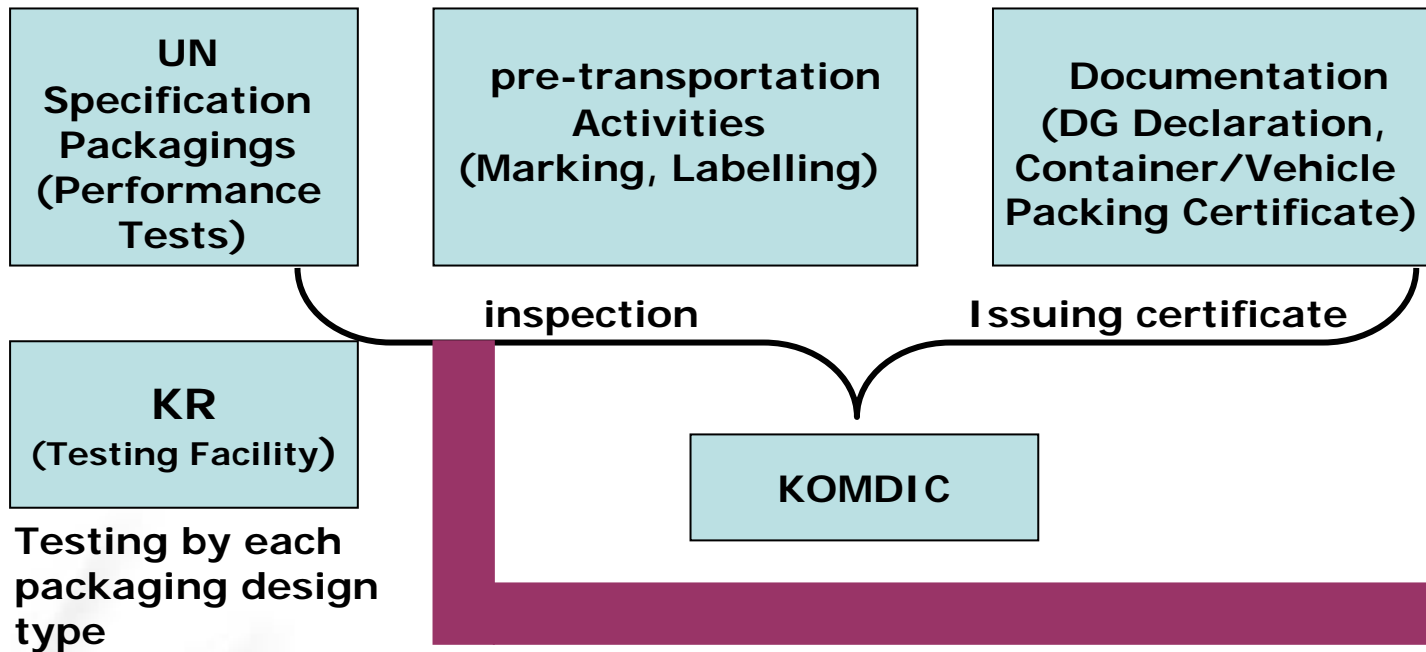


11. The situations in Korea – Air





11. The situations in Korea – Ocean





11. The situations in Korea – Costs /UN Packaging Test

2003.11

한국 선급				한국생활환경시험 연구원		
용기종류	단위	검정 수수료(원)	설계시험 수수료(원)	항 목	수수료(원)	첨부사항
포대	장당	10	61,000	검사	US\$ 30 (15Box이하)	* 15 Box 초과 시 - 1 Box당 US\$ 2 추가
상자	50kg 이하	20	61,000		* 출장 시 US\$ 80 (40 Box 이하)	* 40 Box 초과 시 - 1 Box당 US\$ 2 추가 * 출장비 : 왕복 택시요금 (ex: 김포공항 등 = 10,000원)
	100kg 이하	30				
	200kg 이하	40				
	200kg 이하	60	기본료	4,000		
드럼, 제리캔, 바렐	10L 이하	30	61,000 (플라스틱류 및 복합용기 123,000)	낙하 시험	10,000	① 중량물(30kg 이상) - 5,000원 추가
	40L 이하	50				② 내포장이 Plastic인 경우 - 10,000원 추가 * 단, Plastic백이나 발포폴리에스틸렌 box는 제외
	100L 이하	60				③ 전 포장 용기 해당
	250L 이하	90				전 포장 용기 해당 * 단, Outer(Plastic 백)는 제외
	450L 이하	100				외포장용기가 Fiberboard box인 경우만 적용
금속제 용기 (250L기준)	개당	30,000	123,000	적재 시험	6,000	
금속제이외 용기 (250L 기준)	개당	300	123,000	흡수도	6,000	
금속제 용기	개당	21,420	97,550			④ 액체를 포장하는 포장용기



11. The situations in Korea – Costs Container Packing Certificate

● 검사수수료

1) 정부대행검사

구 분		기본수수료
적재검사	- 1건당	80,000원
컨테이너수납검사	-20피트 컨테이너1개당	70,000원
	-40피트 컨테이너1개당	84,000원

2)기타

구 분		기본수수료
위험물용기, 포장 및 표찰증명	- 1건당	70,000원
위험성증명	- 1건당	70,000원

※ 20피트 컨테이너수납검사의 기본수수료를 적용함.



11. The situations in Korea

- Time, Air

No.	Description	Resource Title	Time (H)	비고
1	하주에서 포장업체로 운송	포장 의뢰	3	
2	운송차량으로의 탑재 및 하역	대 기	3	
3	포장 {(5Lx4ea)x25box}	포장	12	
4	포장업체에서의 대기시간	대 기	3	
5	포장업체에서 검사소로 운송	검사 의뢰	1	
6	운송차량으로의 탑재 및 하역	대 기	3	
7	포장 검사	검사	24	
8	운송차량으로의 탑재 및 하역, 검사 전후의 대기시간	대 기	6	
9	검사소에서 포장업체로 운송	검사 완료	1	
10	운송차량으로의 탑재 및 하역	대 기	3	
11	포장업체에서 포워더로 운송	항공 운송 의뢰	1	
12	운송차량으로의 탑재 및 하역	대 기	3	
13	포워더에서 공항으로 운송	입고	2	
14	탑재 작업 및 항공기 출발 전 대기시간	대 기	6	
탑재까지의 총 소요 시간			71(H)	



12. The Problems

- ISRP are designed to achieve three goals:
 - (1) To ensure that Dangerous Goods are packaged and handled during transportation and to minimize the consequences should an incident occur, and
 - (2) To provide effective communication to carriers and emergency responders of the hazards of the materials being transported.
 - (3) To facilitate the continued transport of Dangerous Goods in international commerce.

“But, the current system - - - ?”



13. Conclusions

- Compliance and enforcement activities should be key to all concerned authorities' efforts to reduce accidents, deaths and injuries, and property damage that can result from unsafe operations by companies or individuals who ship or transport DG or manufactures or maintain DG containers and packagings.
- Inspections must be conducted on the activities of compliance, **not on the normal flow of the shipments** in compliance with the ISRP.



13. Conclusions

- **Without the national comprehensive program for the safe transport of dangerous goods covering all kinds of modes, we are always with the potential for dangerous goods incidents with catastrophic consequences.**

“High risk, low probability events don’t lend themselves to traditional cost-benefit analysis for deciding resource allocations. DOT strives for zero tolerance and tries to organize its efforts and resources to achieve the goal as efficiently as possible. The public has the right to expect the government, shippers and carriers to make every reasonable effort to protect it against even the remote possibility of a dangerous goods disaster.” – U.S. DOT, Departmentwide Program Evaluation of the HM Transportation Programs, Final Report, March 2000