

Dangerous goods can create accidents engineering essay



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Dangerous goods are essentially for wide range of global industry, commercial, medical and research requirement and processes. This is because of the advantages of air transport, a great deal of this kind of dangerous cargo is carried by air transport called airplane. Besides that, in term of definition dangerous goods (DG) is something about hazard material or can be easily said any risk object which can causes mischief such as explosive, corrosive, flammable, toxic and even radioactive. Nevertheless, ICAO has been recognized the importance of this type of cargo and has been taken steps to ensure that such of cargo can be carried safely.

Furthermore, dangerous goods posses lots of significant risks and impacts. For example like it can start a fire and help in spreading a fire. Then, it can react with aircraft material, can release toxic vapor and even come o worst explosion might happen.

http://www.ritchiestraining.co.uk/pix/uploaded/Library/Ritchies_Dangerous_Goods_By_Air_and_Sea.jpg

Figure 1: Dangerous Goods Can Create Accidents

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Figure 2: Valujet Accident by Explosion

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There is an incident where can be proved that hazard material can causes harm to aircraft itself. On May 11, 1996 - Everglades, Miami, Florida - ValuJet, Flight 592 - McDonnell Douglas DC-9-32, N904VJ. The in-flight fire was caused by activation of one or more oxygen generators in the forward cargo hold. The generators were outdated, improperly labeled, lacked safety caps and were prohibited from being transported on a passenger flight. The loss of control resulted either from flight control failure or incapacitation of the crew due to extreme heat and smoke. Recently, all 110 aboard killed.

The person who handles dangerous goods at airport called dangerous goods inspector. He / she must be well trained in every aspect of the duties as a technical inspector and regulatory officer otherwise the aviation will turn down. This kind of person must aware where an each shipment of dangerous goods may possibly represent an intimidation to life, health, property or environment. In addition, the inspector should obey the procedures and regulations attempt to handle cargo and minimize the danger during transport. Basically, how do the inspector handle the DG is he / she carried out at cargo facilities with the scale and nature of the operation. Besides that, inspection of procedures includes visiting operators or handling agent's premises as proper.

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2. 0 Transport Dangerous Goods by Annex 18

Annex 18 can be specified as standard and recommended practices which enable dangerous goods to be carried safely. Annex also makes compulsory upon Contracting States the requirements of the Technical Instructions, <https://assignbuster.com/dangerous-goods-can-create-accidents-engineering-essay/>

which contain the very detailed and various instructions necessary for the correct handling of dangerous cargo. Logically speaking, the use of these common bases by all forms of transport allow cargo to be transferred safe, sound and even smooth between air, sea, rail and road modes.

Nevertheless, ICAO requirements for the safe handling of dangerous goods firstly identify a limited list of those substances which are unsafe to carry in any circumstances and then show how other potentially dangerous articles or substances can be transported safely.

Technique of Transport Dangerous Goods

Classification

5. Procedures & Emergency Respond
3. Documentation, Acceptance for Air Transport
4. Handling & Stowage
2. Packaging, Marking & Labeling

Figure 3: Technique of Transport Dangerous Goods

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Identification and Classification of DG

The nine hazard classes are those determined by the United Nations Committee of Experts and are used for all modes of transport. Class 1 includes explosives of all kinds, such as sporting ammunition, fireworks and

signal flares. Class 2 comprises compressed or liquefied gases which may also be toxic or flammable examples are cylinders of oxygen and refrigerated liquid nitrogen. Class 3 substances are flammable liquids including gasoline, lacquers, paint thinners, etc. Class 4 covers flammable solids, spontaneously combustible materials and materials which, when in contact with water, emit flammable gases, such as some powdered metals, cellulose type film and charcoal. Class 5 covers oxidizing material, including bromated, chlorates or nitrates and this class also covers organic peroxides which are both oxygen carriers and very combustible. Class 6 includes poisonous or toxic substances example pesticides, mercury compounds, etc comprise together with infectious substances which must sometimes be shipped for diagnostics or preventative purposes. Radioactive materials are in Class 7 which there are mainly radioactive isotopes needed for medical or research purposes but are sometimes contained in manufactured articles such as heart pacemakers or smoke detectors. Corrosive substances which may be dangerous to human tissue or which pose a hazard to the structure of an aircraft are dealt with in Class 8 for example, caustic soda, battery fluid, paint remover. Finally, Class 9 is a miscellaneous category for other materials which are potentially hazardous in air transport, such as magnetized materials which could affect the aircraft's navigational systems.

<http://www.ctsgb.ltd.uk/assets/generic/icons.gif>

Figure 4: 9 Classes of Dangerous Goods

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Packaging, Marking & Labeling

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Basically, the operator or handling agent looks at the external appearance of all the packages of dangerous goods as a safety package inspection before being transported. In addition, the items need to keep in the operator's custody provided whether the goods are due to transport or have been transported.

However, the inspection will check that the requirements of marking and labeling have been fully filled. Hence, type of packaging that has been used is permitted and tag along with the correct specification. For the radioactive material, the handling agent will pack the material based on the radiation level packages which fit in state for transport.

Nevertheless, the packages of dangerous goods should only be opened in exceptional circumstances and with extremely caution. Once if the package opened, they need to take the potential hazard from the contents into account and handle it with fully attention. Any package opened during an inspection, it must be handed before to the consignee which means the goods must be restored in its original condition by inspector.

[https://images.fedex.](https://images.fedex.com/images/us/services/options/ground/hazmat/PhenolSolid_Boxes.jpg)

[com/images/us/services/options/ground/hazmat/PhenolSolid_Boxes. jpg](https://images.us/services/options/ground/hazmat/PhenolSolid_Boxes.jpg)

Figure 5: Packaging, Marking, and Labeling

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Documentation and Acceptance for Air Transport

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Documentation is to determine a dangerous goods shipment meets all applicable requirements. Information that contain in several documents need to transport out a detailed check because it is necessary to cross refer from one document to another. The handling agent must check the associated documents when he / she have the packages of dangerous goods in his / her premises. A document check only is made when there are no packages available. There are several inspections that required inside the documents such as Air Waybill, Shipper's Declaration, Acceptance Check List, Notice to Captain and others. The intention of inspecting the Air Waybill is to ensure that they have completed correctly by using the correct classification and method of packing so that it can be established.

Thus, the purpose of inspecting the Acceptance Check List is to make sure that the handling agent uses a form which allow for completion by the acceptance clerk. Nevertheless, the Notice to Captain is to determine that all the required information was given and checked. At this moment, where the form was signed by the pilot and the loading / stowage requirement met.

https://images.fedex.com/images/us/services/options/ground/hazmat/OP-900_Exception.jpg

Figure 6: Documentation of Dangerous Goods

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2. 4 Handling and Stowage

Handling also can be known as loading so that it can be pronounced as

loading and stowage. The inspection of loading and stowage at the cargo
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side is to ensure the dangerous goods are adequately secured to prevent movement. Then, the requirement of segregation distances can be maintained respectively when any radioactive material has been stowed. Besides that, any cargo aircraft that has placed dangerous goods on the main deck and only get accessible by the Technical Instruction. And also make sure of toxic or infectious substances are not in close proximity to animals and foodstuffs, it can be harmful to them and also aircraft fuselage if there are any leakages from the toxic substances.

http://www.csc-scc.gc.ca/text/plcy/images/318-gl5-1_e.gif

Figure 7: Handling and Stowage Table

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2. 5 Procedures and Emergency Response

The procedure of transport dangerous goods is a guidance tool for airport directors and crews to use when developing, evaluating, updating or training an Airport Emergency Plan. It also can be informed the emergency responders to who are not experienced with airport operations or airport emergencies.

However, whenever once hazardous material spills out on the aircraft body, it can be resulted as aircraft accidents or incidents. This is because the body of aircraft will be corroded and eventually it will create a hole on it and can be cabin pressurization and even lead to the aircraft crash. That's why precautions should be aware to avoid exposure to hazardous components for safety purposes. In this kind situation, Airport Emergency Plan (AEP) needs to <https://assignbuster.com/dangerous-goods-can-create-accidents-engineering-essay/>

clean up the aftermath emergencies involving hazardous materials such as foam and hydrocarbon. The agencies must follow the strategies and procedures which contain in the flow of hazardous materials after an emergency inside the aircraft or even at the airport. Besides that, they also need to repair the pavement of the runway if the materials damaged the runway by the spills.

[http://2. bp. blogspot.](http://2.bp.blogspot.com/_nffKip000Do/TB-eG0yJ94I/AAAAAAAAA1c/boXv9djb9dw/s1600/emergency_response_title_page.jpg)

[com/_nffKip000Do/TB-eG0yJ94I/AAAAAAAAA1c/boXv9djb9dw/s1600/emergency_response_title_page. jpg](http://2.bp.blogspot.com/_nffKip000Do/TB-eG0yJ94I/AAAAAAAAA1c/boXv9djb9dw/s1600/emergency_response_title_page.jpg)

Figure 8: Emergency Responses

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3. 0 Class 3 Flammable Liquids

In many classes of dangerous goods that have been enshrined in the aviation law procedures. There are limitation on loading dangerous goods inside the aircraft, this is because not all classes are allowed to be loaded inside the aircraft unless with special exemption or provision. So, I choose Class 3-Flammable Liquids as my point of assignment of TDG.

[http://www. thecompliancecenter.](http://www.thecompliancecenter.com/store/media/catalog/product/l/b/lbcn06us_hi.gif)

[com/store/media/catalog/product/l/b/lbcn06us_hi. gif](http://www.thecompliancecenter.com/store/media/catalog/product/l/b/lbcn06us_hi.gif)

Figure 9: Class 3 Flammable Liquid

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Flammables liquids can be defined as liquids, mixtures of liquids or liquids that contained solids in solution or suspension which is given off a flash point of flammable vapor at suitable temperatures must not more than 60-65 Celcius. Transportation must follow the procedure which is transport the liquids at temperatures at or above the flash point for the safety purposes. Hence, this class has specific reason for regulation which is competent of posturing severe hazards due to the volatility, combustibility and potential in causing or propagating rigorous conflagrations. Besides that, there are several common transported flammable liquids in aviation industry such as acetone, paints, alcohols, perfumes, gas oil, and etc.

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Nevertheless, dangerous goods inspector has an authority to handle flammable liquids. He also has capability to inspect all customer requests that has connection with logistics of flammable liquids for example like packing, packaging, compliance, freight, forwarding and training.

Meanwhile, the labeling and marking of dangerous goods, the method in which they shall be located at beneath an aircraft, the responsibilities of the crews in respect of the carriage of dangerous goods and the action to be taken in the event of emergencies arising involving dangerous goods.

Otherwise, if the operator fails to follow the procedure, it can turn down the aviation world industry and make disaster and even can affect the aircraft fuselage and passengers.

http://images.thenews.com.pk/updates_pics/1-24-2011_9678_l_u.jpg

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Figure 10: Airport Explosion by Flammable Liquid Leakage at Moscow

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4. 0 Conclusion

As my conclusion, Transport Dangerous Goods is very important subject where we as an aviator can know about the dangerous goods as well.

Dangerous goods can be known as hazard materials which can cause harm to surrounding including human and animal. As we all know that dangerous goods has nine classes provided which is Class 1-Explosives, Class 2-Gases, Class 3-Flammable Liquids, Class 4-Flammable Solids, Class 5-Oxidizing Material, Class 6-Toxics and Infectious, Class 7-Radioactive, Class 8-Corrosive, and Class 9-Miscellaneous.

Furthermore, with this kind of classifications we can conclude that the goods inside container are dangerous or not. Then, I have learned about the flow of instruction in dangerous goods which is classification, packaging, documentation, handling, and emergency responses. This flow is a must to operator, if one of them is missed, the transportation will automatically cancel and aviation industry will be terminated.

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5. 0 Bibliography

5. 1 Website

1) [www. dgiglobal. com](http://www.dgiglobal.com)

<https://assignbuster.com/dangerous-goods-can-create-accidents-engineering-essay/>

2) [www. caa. md](http://www.caa.md)

5. 2 References

1) Transport Dangerous Goods Slide Show

5. 3 Books

1) Annex 18

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2. 4 Handling and Stowage

2. 5 Procedures and Emergency Response

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5. 1 Website