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**Module 3**

**Packaging of Infectious Substances**



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## Overview

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- ☣ Triple packaging
- ☣ Packaging Category A infectious substances (P620)
- ☣ Packaging Category B biological substances (P650)
- ☣ Packaging Exempt human/animal specimens
- ☣ Packaging limitations
- ☣ Packaging exercise



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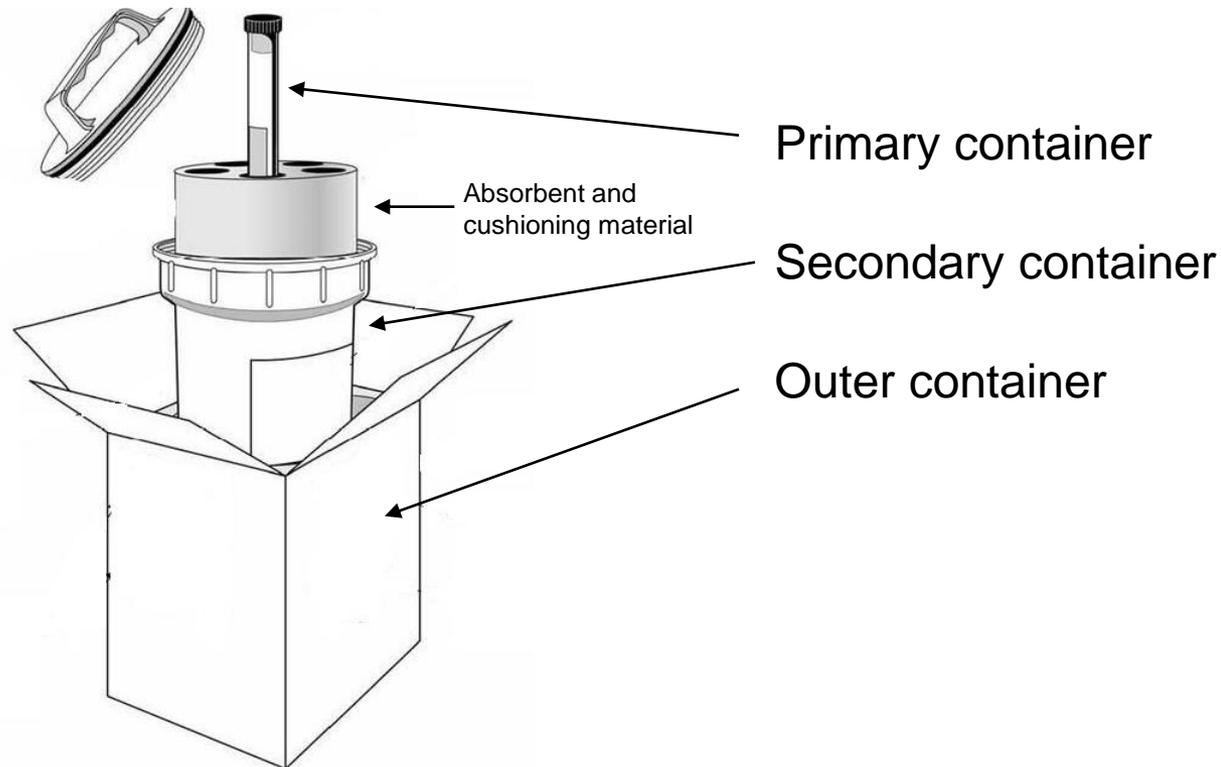
# **How are Category A, Category B, and Exempt human/animal specimens packaged?**



## Triple packaging

Triple packaging provides three layers of containment to protect the substances being shipped. These layers are primary, secondary, and outer containers.

The following diagram shows the basic concept of triple packages.





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**What are the requirements for  
packaging Category A substances?**



## Category A packaging requirements

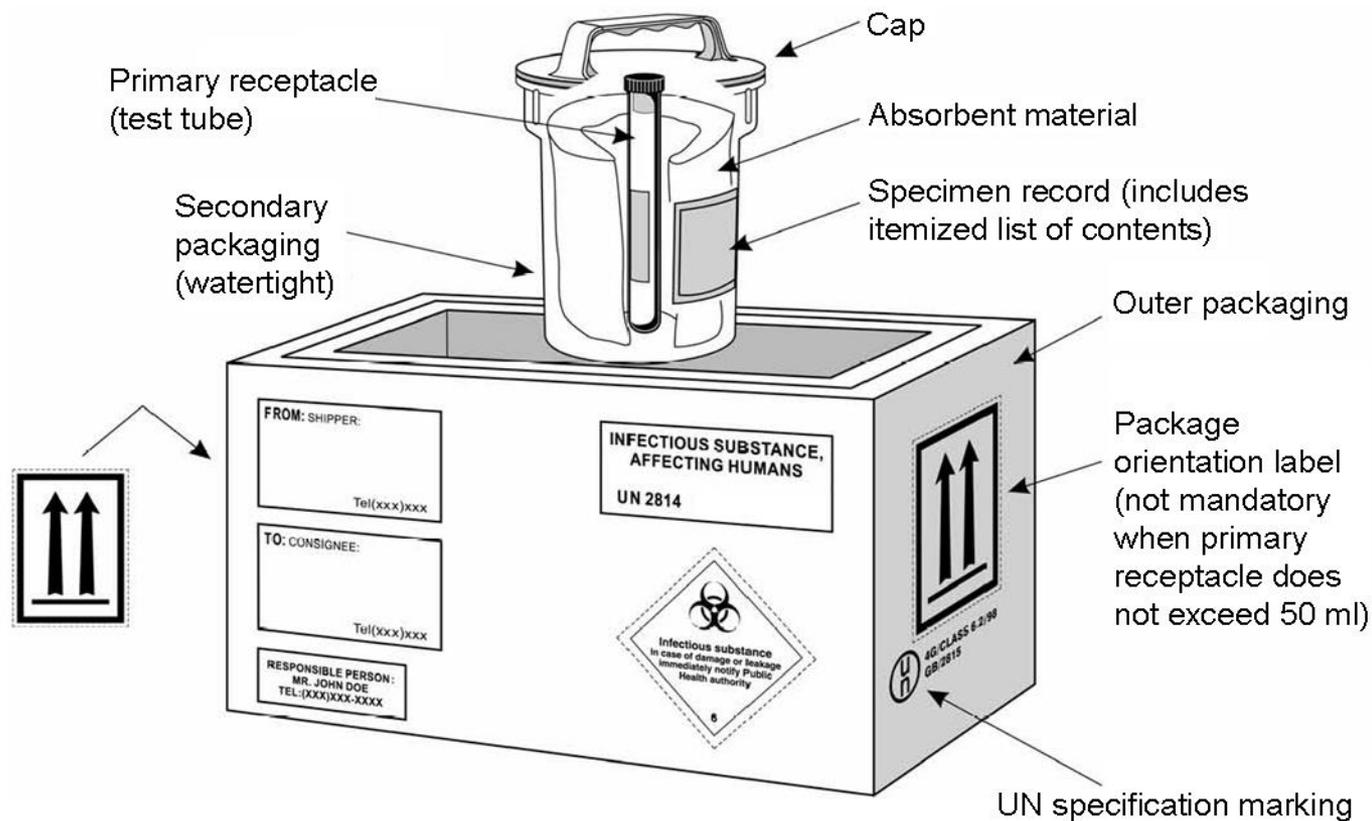
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- ☣ Primary container is leakproof
- ☣ Secondary container is leakproof
- ☣ Outer container is rigid
- ☣ UN specification marking:
  - ☣ Pressure tested at 95 kPa
  - ☣ Drop tested from 9 m
  - ☣ Puncture tested at 7 kg
  - ☣ Stacking tested
- ☣ Shipper must be trained





# Category A packaging requirements





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**What are the requirements for  
packaging Category B substances?**



## Category B packaging requirements

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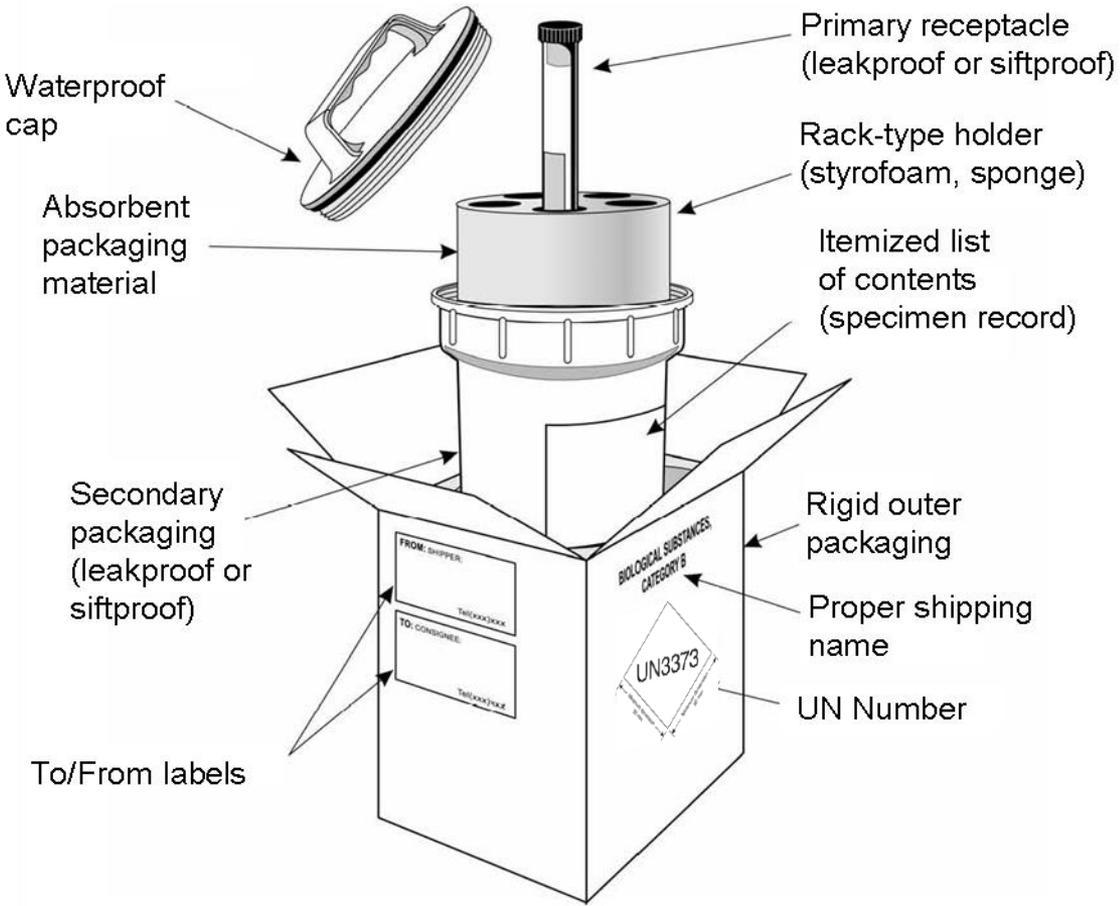
- ☣ Primary container is leakproof
- ☣ Secondary container is leakproof
- ☣ Either the primary or the secondary container must be pressure tested at 95 kPa
- ☣ Either secondary or outer container is rigid  
If the shipment is transported by air, the outer container must be rigid.
- ☣ Drop tested from 1.2 m





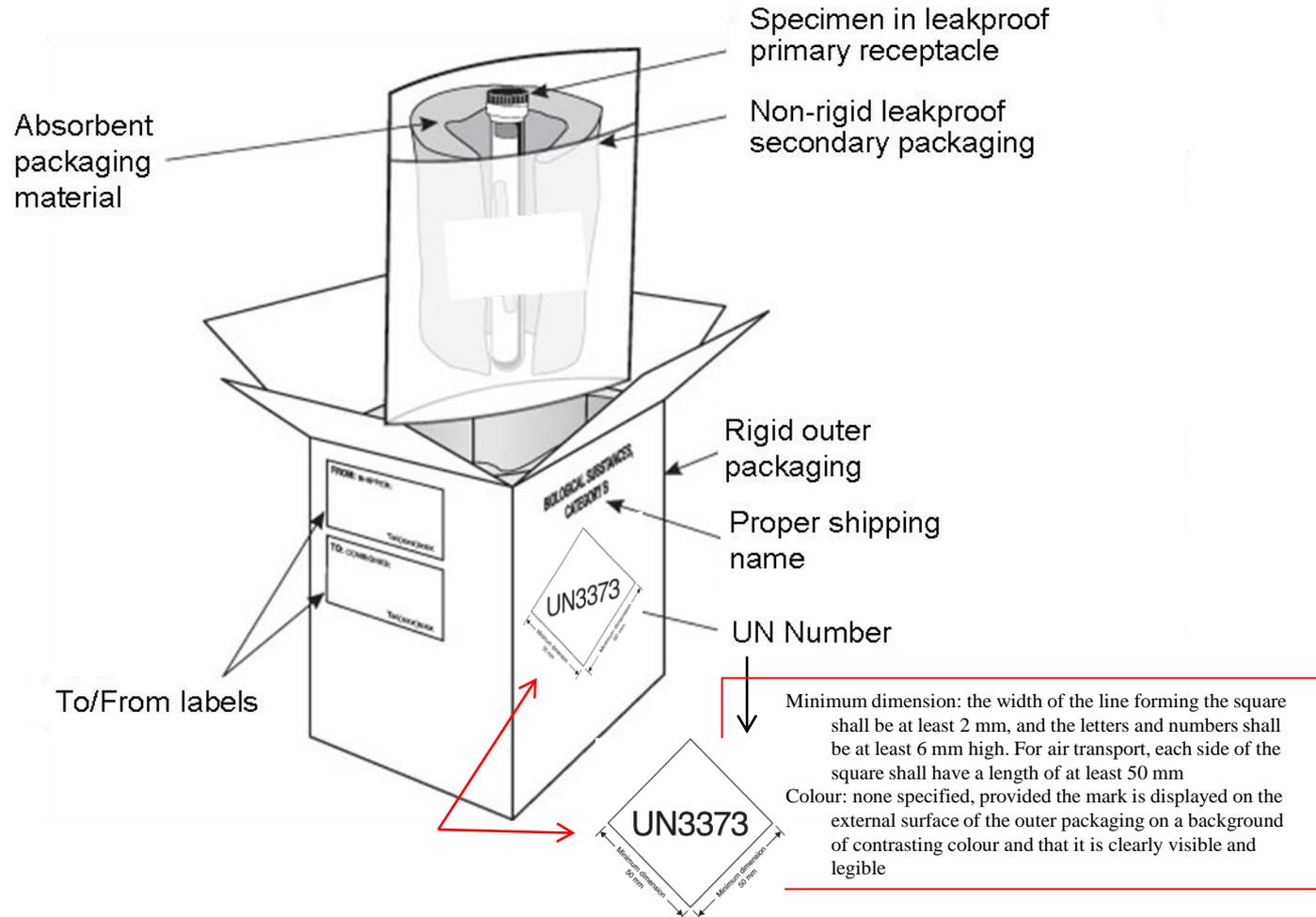
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# Category B packaging requirements





# Category B packaging requirements





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# **What are the requirements for packaging Exempt human/animal specimens?**



# Packaging requirements for Exempt human/animal specimens

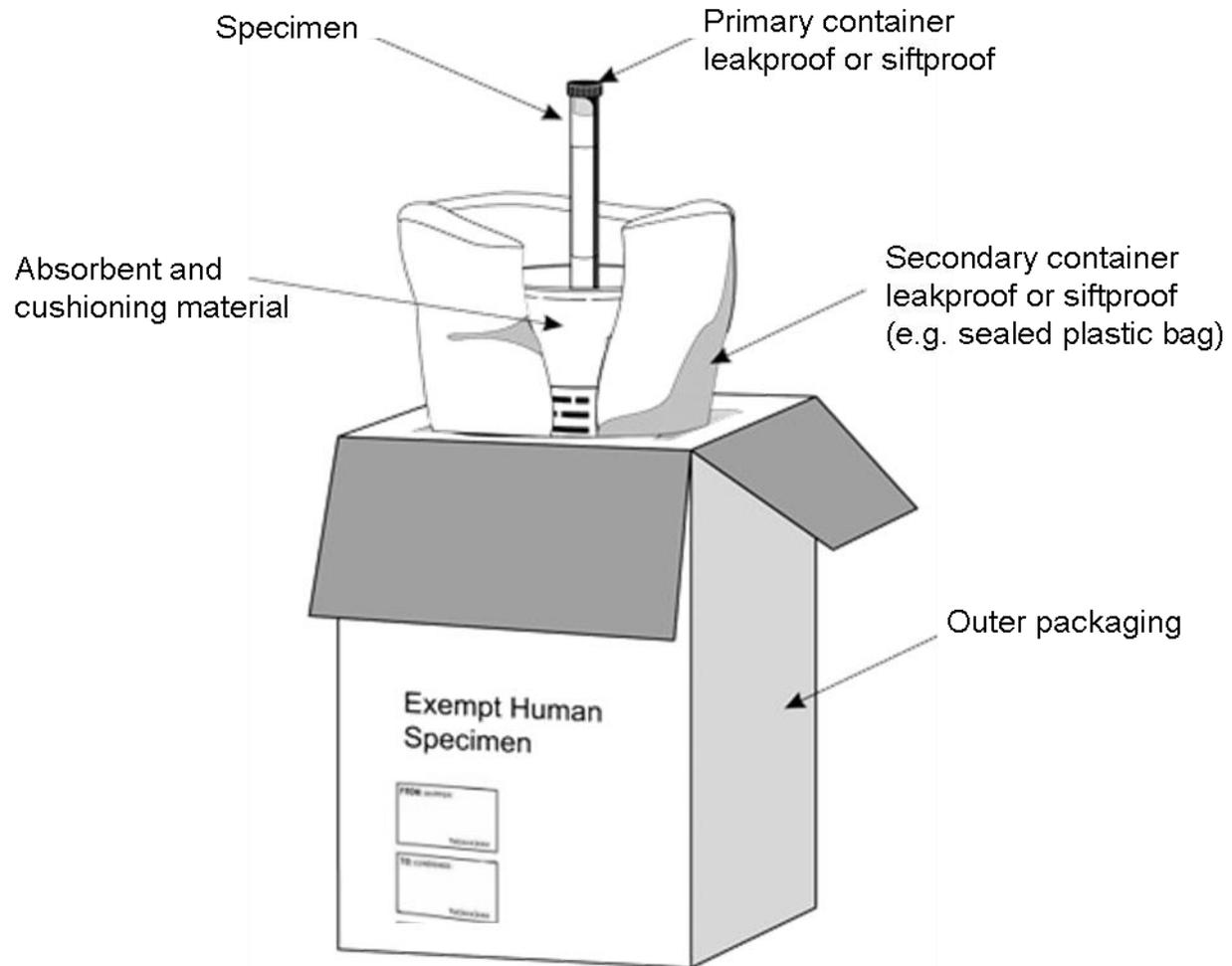
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- ☣ Primary container is leakproof
- ☣ Secondary container is leakproof
- ☣ Outer container must be of adequate strength





# Exempt packaging requirements





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**What are the limitations for shipping  
infectious substances by air?**



# Limitations for shipping

## ☣ Weight and volume (excluding overpacks)

### Category A Substances

Maximum 50 ml or 50 g per package for passenger aircraft

Maximum 4 litres or 4 kg per package for cargo aircraft

There are no limitations for shipments by road, rail or sea

### Category B Substances

Maximum 4 litres or 4 kg per package for passenger or cargo aircraft

Maximum 1 litre per primary container for passenger or cargo aircraft

There are no limitations for shipments by road, rail or sea

## ☣ Multiple samples

Multiple primary containers can be placed in the same package and must be individually wrapped or separated to prevent contact

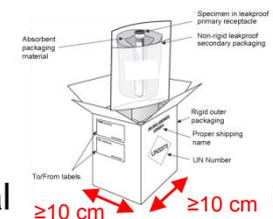
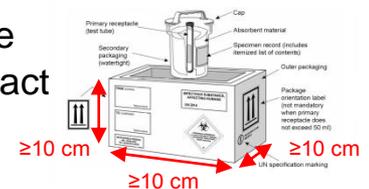
## ☣ Package dimensions

### P620 packages:

The smallest external dimension shall not be less than 10 cm

### P650 packages:

At least one surface of the outer packaging must have a minimal dimension of 10 cm x 10 cm





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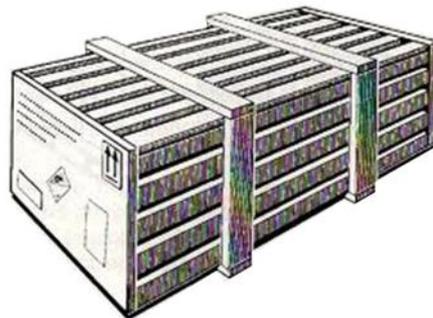
**Can packages shipped to the same  
destination be consolidated?**



# Overpacks



These figures show  
examples of overpacks





## Overpacks

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- ❖ Overpacks are enclosures used by a single shipper to contain one or more packages shipped to a single destination and to form one unit for convenience of handling, stowage or refrigeration during transport.
- ❖ Examples of overpacks are a number of packages either:
  - ❖ Placed or stacked on to a load board such as a pallet and secured by strapping, shrink wrapping, stretch wrapping, or other suitable means; or
  - ❖ Placed in a protective outer packaging such as a box or crate; or
  - ❖ Placed into an insulated chest and surrounded with refrigerants such as ice, dry ice or gel pads



## Overpacks

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- ❖ Overpacks are useful to ship samples that exceed the individual package quantity limits

For example:

- ❖ A shipper needs to send 100 ml of a Category A substance on a passenger aircraft. However, the quantity limit is 50 ml per package
- ❖ The sample could be split, divided into two packages of 50 ml, and then consolidated into a single overpack
- ❖ There are no specifications or testing requirements for overpacks
- ❖ However, any package placed in an overpack must comply with the regulations



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**Exercise**  
**Packaging infectious substances**



## Provided supplies

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- ☣ Gloves
- ☣ 2 Category A samples in primary containers
- ☣ Secondary container
- ☣ Rubber bands
- ☣ Absorbent material
- ☣ Inner lining
- ☣ Cushioning material
- ☣ Outer container
- ☣ Disinfectant
- ☣ Laboratory test instructions and itemized list of contents



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# **SOP for Category A packages**

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<b>Step</b>	<b>Practice</b>
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	



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## **Questions and comments**