Cold chain and air transportation

Envirotainer containers: human error

This document attempts to illustrate three typical cases of human error behind the breakdown in the airborne cold chain involving Envirotainer containers.

1 Unforeseen change to the transport timetable

Envirotainer containers were scheduled for a flight and were waiting on the tarmac to be loaded. A passenger arrived at the boarding gate with his pet to be placed in the hold. No matter whether this had been scheduled; the passenger had priority – or at least took advantage of such. As dry ice releases carbon dioxide, the container is therefore incompatible with transporting living animals. Transportation of the Envirotainer was rescheduled for the following flight.
Who is responsible for re-icing the container in such an event? Unless this is defined in writing using a service level agreement or Standard Operating Procedure, there is a risk no one will take action and a product temperature deviation will result.

2 Dry ice types and re-icing the Envirotainer container

Dry ice is available in two formats: blocks weighing 2-7 kg ensuring long and stable thermal exchange, and flakes or mini-bricks that accelerate sublimation (given the greater surface area for heat exchange) and make it possible to preserve items in a warmer environment but for a shorter period. Both types can be used with and without wrapping. The wrapping slows down and extends the period of use. The type of packaging used also affects dry ice performance; the thicker it is, the slower the heat exchange.
Container re-icing is should be conducted by trained personnel. Any error in the re-icing the container can cause a product temperature deviation. The shipper should plan for long transits or delays in the transportation schedule, and ensure:
– Responsibility for re-icing is defined and understood
– Contingency planning and re-icing amounts are defined before hand
– Ground handling agents are trained to perform re-icing
– Any re-icing is documented using a check sheet or other form of reporting

It is also very important to inspect the batteries charge level. The minimum requirement for small batteries is 9 volts during use and 11 volts for new small batteries. The RKNe1 container can be recharged using the building's electrical outlet.

For further information or specific questions contact: **techcare@axa-matrixrc.com**

3 Type RKN t, RAP t or CLD container storage in transit

Dry ice sublimation (solid carbon dioxide sublimates at temperatures above -78°C), combined with product packaging and the container's heat insulation can keep products at temperatures below the ambient temperature. It should be understood that for maintaining the temperature for pharmaceutical products, which is required to be between +2°C and +8°C, the containers in question are sized to deal with outside temperatures of between +10°C and +30°C. Whilst in transit (or during any load break), staff in charge of containers sometimes take the initiative of placing them in cold rooms in the belief that this protects the merchandise, but in fact this irredeemably freezes the contents.

Type RKNe1 containers operate for 30 hours at external temperatures of between -10°C and +30°C.

Remember

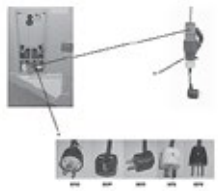
1. There are partnerships of varying degrees of reliability between transport operators using Envirotainers containers and airline companies (management and application of priorities). Priority rules and procedures in the event of a rescheduled departure should be understood and negotiated.

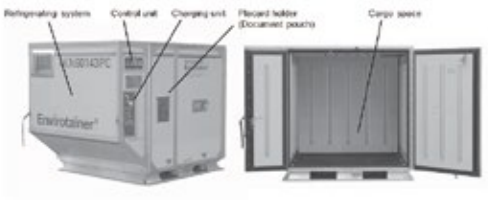
2. Envirotainer recommends using 2-7 kg blocks of dry ice in order to fill the bunker uniformly and ensure a stable and lasting heat exchange. The effects of flakes and mini-blocks are less stable and may result in negative temperatures.

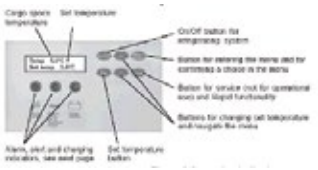
3. - To maintain the temperature required in pharmacies: +2°C / +8°C:
   - At an ambient temperature of +10°C to +25°C (winter), it is recommended to wrap the dry ice
   - At an ambient temperature of +25°C to +40°C (summer), unwrapped dry ice is recommended

   The wrapping to be used must be only paper or thin plastic.

4. For each load break, staff in charge of managing Envirotainers must be experienced in how they operate and be capable of adapting to circumstances (environment, temperature requirements, transit times, etc.) to guarantee that the requisite temperature is maintained. We recommend that said staff be trained directly by the Envirotainer company. www.envirotainer.com







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