

Central Kowloon Route (CKR) - Air Purification System

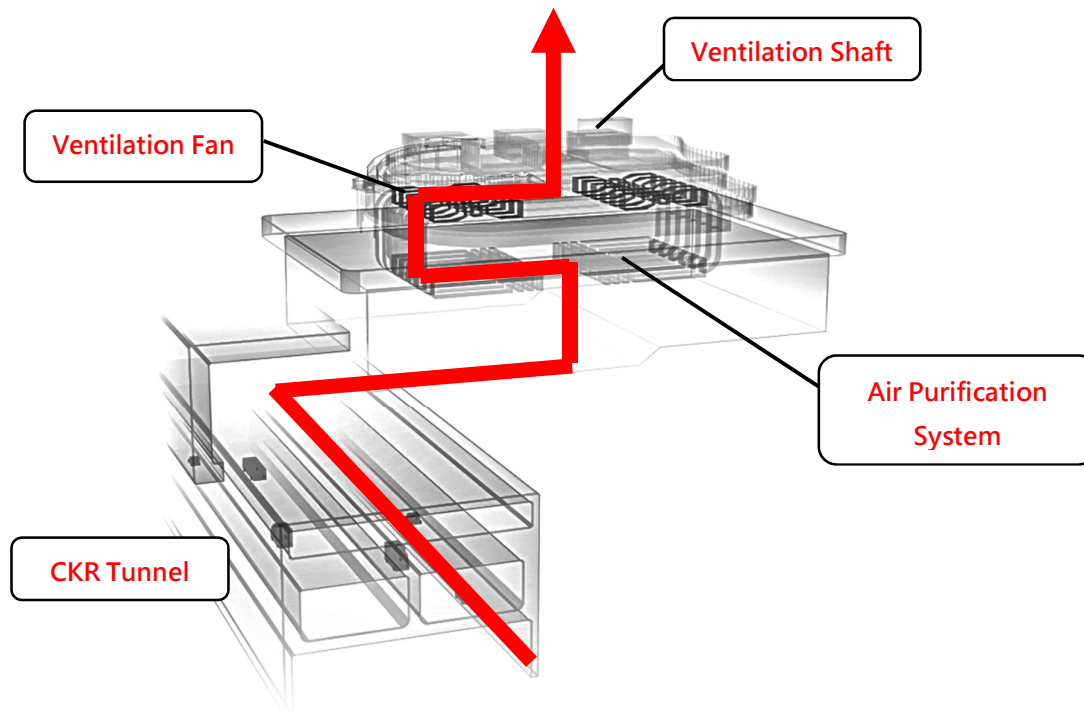
Answer of Worksheet (Secondary School)



Model of CKR Ventilation Building

Choose the correct answer and fill in the blanks.

CKR Tunnel	Ventilation Shaft	Air Purification System	Ventilation Fan
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Each ventilation building of the CKR is equipped with three sets of the advanced air purification system and six ventilation fans to discharge purified air to the atmosphere. Please draw the airflow direction on the model above and state the principle.

(Suggested answer) Emission of motor vehicles in the tunnel will be removed through the ventilation fan, purified through the air purification system, and discharged to the atmosphere from the ventilation shaft, thereby reducing the air pressure inside the tunnel. As air will flow from higher to lower pressure areas, fresh air will enter the tunnel through the tunnel portals to achieve a ventilation effect.

Discussion

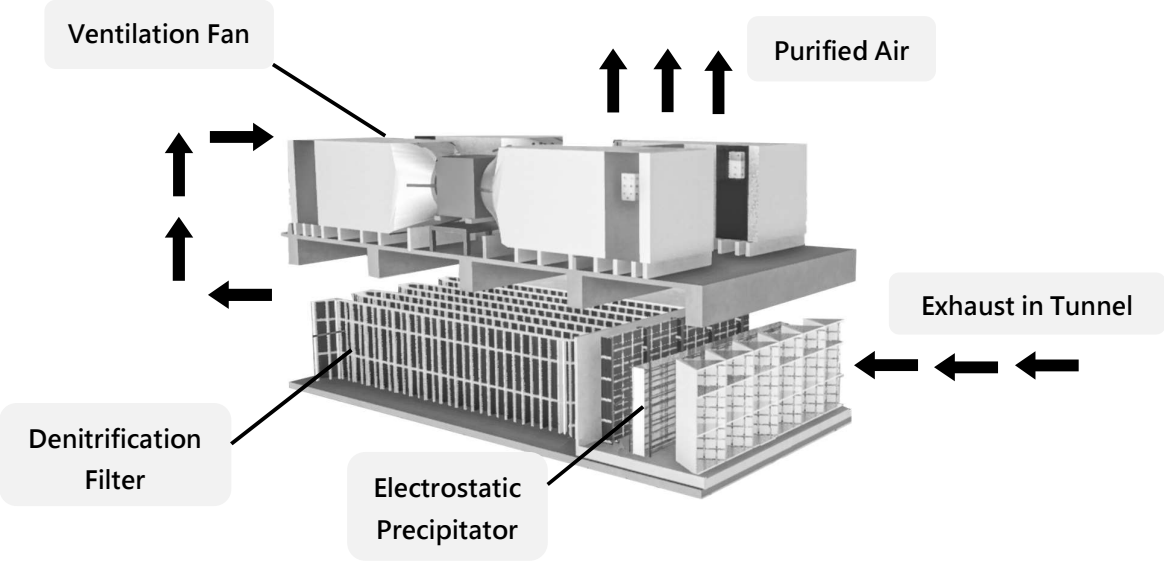
What are the methods to tackle roadside air pollution besides installing an air purification system?

(Suggested points) Adopt fuel and vehicle emission standards; Adopt cleaner alternatives to diesel vehicles; Control emissions from the remaining diesels with devices that reduce pollutants; Strengthen vehicle emission inspections and enforcement against grossly emitting vehicles; Promote better vehicle maintenance and eco-driving habits; Use public transport and reduce road vehicles; Promote electric vehicle adoption.

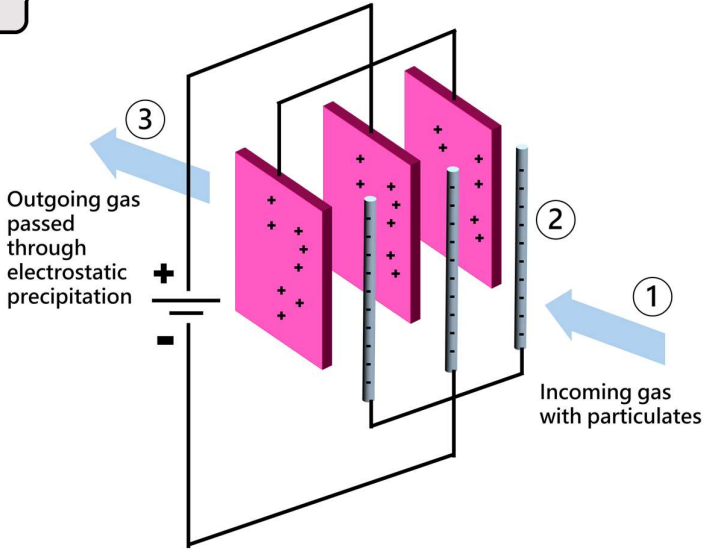
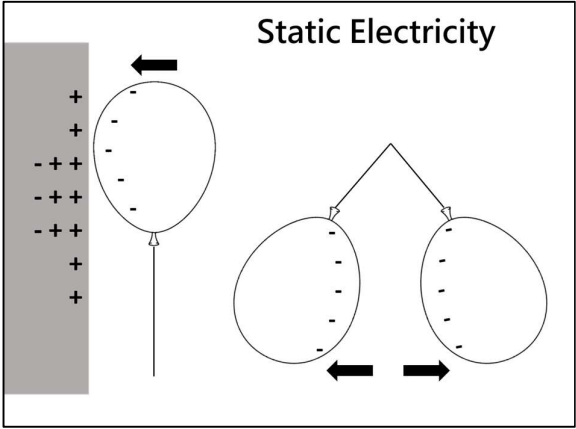
How does the air purification system of the CKR works?

Circle the correct answer :

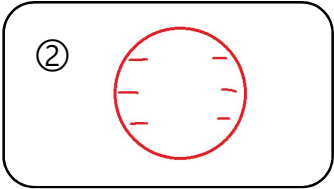
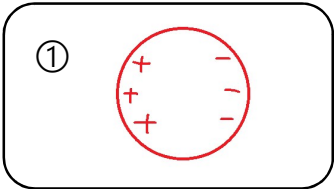
Each ventilation building is equipped with three air purification systems. The air purification system consists of an (electrostatic precipitator/vacuum cleaner) and a denitrification filter. The electrostatic precipitator (gathers/separates) the respirable suspended particulates from the airflow using the electric ions generated by the (high/low) voltage electric field and (adsorbs/expels) them on the dust-collecting electrode plate of the electrostatic precipitator. The denitrification filter uses activated carbon filter as a medium to absorb nitrogen dioxide. This air purification system can effectively remove at least (60%/80%) of the respirable suspended particulates and nitrogen dioxide.



Operating Concept for Electrostatic Precipitator



Please draw the charge of respirable suspended particulates at different stages according to the electrostatic principle and the electrostatic precipitator model shown above.



③ No respirable suspended particulates / Respirable suspended particulates have been filtered