The scenario

Subject	Electrostatic / Surface charge density
Length	2:08
Main goals	To show that electric charge on a conductive material is not spread arbitrarily
Detailed goals	to show that the charge density on the outer surface of a conductive material depends on a curvature of the surface, and that the potential of different points on this surface is the same.
Structure and description of experiments:	
1. Introduction	Conductive materials can be easily charged by touch with a charged body but there is a special way that the charge given is distributed all over the conductive material.
2. Main subject	Surface charge density
Experiments	We can see that the can is shaped so that it has a sharp one end, concave second end and locally flat surface in its middle. We show that this body is not charged by touching it with a probe ball and then touching the electroscope, using two different points of the surface. We charge the can, taking its electrons by a positively charged acrylic rod. Now we check the density of the surface charge. 1. Firstly, a neutral probe is put inside the can in contact with it and then it is brought to touch the electroscope - there is little charge on the probe, so there is little charge density on the inner surface of the sphere. We ground the probe and electroscope. 2. Secondly, we touch the outside surface of the can and find out that there is more charge on a locally flat surface. We ground the probe and electroscope. 3. Lastly, we touch the sharpie end of the can and find out that there is most charge there.
3. Summary, evaluation and remarks	Conclusion: charge given to a conducting body with different curvatures is redistributed so that the highest charge density is where the curvature is greatest. Application: if we want to have low charge density so the field and so the charge leakage is weakest we should use objects with big radius (small curvature), like the dome of Van de Graaff generator. **Level:** primary school and secondary school

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