

## Black Wire Syndrome

When I started in RC models in the late 50's the battery supply for both Transmitter and Receiver was in the form of Zinc / Carbon cells, much like the Alkaline cells we use today - use them, then throw them away. Then in the 60's came the Nickel Cadmium cells (NiCads), the ones we use in most of our RC models today - charge them up and fly. You can do that many times over.

When living in England, the winter period is time to build the next generation of models for the oncoming season of flying, so the radio gear is put to one side for a few months. When the time came to fly, we charged the batteries, off to the field, and that's when the problems started. The batteries gave out very quickly or failed altogether both in the Transmitter and the Receiver. On examination we found that the Negative wire from the battery had turned black and brittle when bent.

This is called the "**Black Wire Syndrome**" and is fatal, not just to the battery pack but it has the ability to travel along the Negative wire, through the on/off switch and continue through to the printed circuit board in the equipment itself.

I'll not go into details about the electrolyte (gas creepage) and the technical crap but it can be caused by leaving the gear in an uncharged state for long periods. Don't forget NiCads self discharge over a period of months. When this happens, the cells go down to zero volts and allow the electrolyte to escape from inside the cell and mix with air. If it's damp where they are stored, the electrolyte and moisture turn into potassium carbonate and the problems start.

What to do to save our valuable equipment from the dreaded Black Wire Syndrome? If you are thinking of storing the gear for any length of time, remove the batteries from both the model and the transmitter and check to see if there is any white powder on the battery terminals. If there is, discard them because they are faulty. If the leads are starting to get brittle, change the packs at once and also check the wiring harness in the model to see if this is going brittle - change that also.

The transmitter is also susceptible as it can travel along the wires to the Printed Circuit board and that's terminal.

Don't think it wont happen to your equipment or be put off by the know all's telling you it never happens - they may be the chaps that crash their model every other week and have to replace most of their gear anyway, so they never see it.

Why am I telling you this? Because my battery died the other week and never indicated it was on its way out till I checked it at the field after having a full charge the night before and showed 100% charge. **The Black Death** had come to claim my battery pack and it was only 2 years old. Maybe in manufacture it was made a little hot as the wires are solder terminated, or it was overcharged at some time.

Happy Landings  
Malc. Nicklin AUS 56289