

## What you didn't know about Lithium Ion Batteries

### HISTORY

During the 1970's it was theoretically predicted that Lithium Ion could be used to store energy which could be recharged. This prompted research until in 1982 the chemistry was discovered to make this a reality. It took almost 10 years for the concepts to be honed into a commercial product.

The first commercial lithium ion battery was produced by Sony in 1991 and installed as a power source for rechargeable mobile phones. Since that time, R & D by several labs has continued to refine the chemistry to increase the recharge time and reduce size. Alternative exotic metals have also been introduced that have enabled the miniaturisation of batteries and substantial increases in battery life.

Li-ion batteries today are common in most mobile phones and hand-held devices. They are one of the most popular types of battery for portable electronics, with one of the best energy-to-weight ratios, no memory effect, and a slow loss of charge when not in use.

### SAFETY

In addition to uses for consumer electronics, li-ion batteries are growing in popularity for defence, automotive, and aerospace applications due to their high energy density.

However certain kinds of mistreatment may cause Li-ion batteries to explode.

Li-ion chemistry is not as safe as nickel metal hydride or nickel-cadmium, and a li-ion cell requires several mandatory safety devices to be built in before it can be considered safe for use outside of a laboratory.



### TRANSPORT REGULATION

Since the beginning of 2009, the international transport regulator, IATA, has classified li-ion batteries as a Dangerous Good and made some restrictions on transportation. This has had its impact on bulk mobile phones being sent to us for recycling because they now need to have a label on the boxes.



Phones sent by Satchel fulfill these new regulations already.

In general, bulk mobile phones that have Li-ion batteries now need to be declared a dangerous good and labelled with a Caution sticker. There may be no loose or damaged batteries included. But if the battery is fully enclosed in the mobile handset, and the box is labelled correctly, then transport is allowed.

Anyone preparing to send a box of mobile phones for recycling, can go to our website and print out the Shipping Labels that are approved. Regular donors of mobile phones can also ask your nominated charity for stickers.

### GUIDELINES FOR A LONG LIFE

- Like many rechargeable batteries, lithium-ion batteries should be charged early and often. However, if they are not used for a long time, they should be brought to a charge level of around 40%–60%
- Li-ion batteries should not be frequently fully discharged and recharged ("deep-



cycled"), but this may be necessary after about every 30<sup>th</sup> recharge.

- Li-ion batteries should never be depleted to below their minimum voltage, 2.4 V to 3.0 V per cell.
- Li-ion batteries should be kept cool. Ideally they are stored in a refrigerator. Ageing will take its toll much faster at high temperatures. The high temperatures found in cars cause li-ion batteries to degrade rapidly.
- Li-ion batteries should be bought only when needed, because the aging process begins as soon as the battery is manufactured.

### APRIL 2009

18th - Cerebral Palsy Tasmania: Special Olympics Multi-Sports, N.W. Tasmania.

### MAY 2009

17th - Kidney Health Australia: World Kidney Health Day & World Hypertension Day.

17th - RSPCA SA: Million Paws Walk, Elder Park, Adelaide.

24-30th - Kidney Health Australia: Kidney Health Awareness Week.

31st - Clean Up Australia: Murray Community Clean Up in Cobram, Echuca & Cohuna.

31st - Kidney Health Australia: World No Tobacco Day (WHO).

### JULY 2009

July - Kidney Health Australia: Diabetes Awareness Week.

### BIG W NATIONAL SACHEL INITIATIVE

At the beginning of December, Big W stores throughout Australia installed post paid satchels in new acrylic dispenser boxes at their Home Entertainment Counter.

This national retail initiative has introduced a combination of 5 state charities to Big W shoppers. At the same time, it has reminded Big W customers of the benefits possible from recycling their old mobile phones.

In Western Australia, The Centre for Cerebral Palsy joined with Whitford City Big W to launch the fund raising campaign for that state.

"There has been a fantastic response," a Big W spokesman said, "customers are more aware than ever of the benefits of recycling their old mobile phones, and feel pleased to be able to assist people with Cerebral Palsy at the same time."

Originally the idea of Stephen May at Scope Victoria, the state Cerebral Palsy organisations were keen to support the national initiative. More than 40,000 satchels were distributed to stores, and almost 1500 phones have already been sent for recycling.

