

INTERNATIONAL
MANGANESE INSTITUTE

ANNUAL CONFERENCE
PANEL DISCUSSION

ELECTROLYTIC MANGANESE DIOXIDE

END USE

- Electrolytic Manganese Dioxide is used almost exclusively in the manufacture of Dry Cell Batteries.
- Minor quantities are used in ceramics & ferrites.

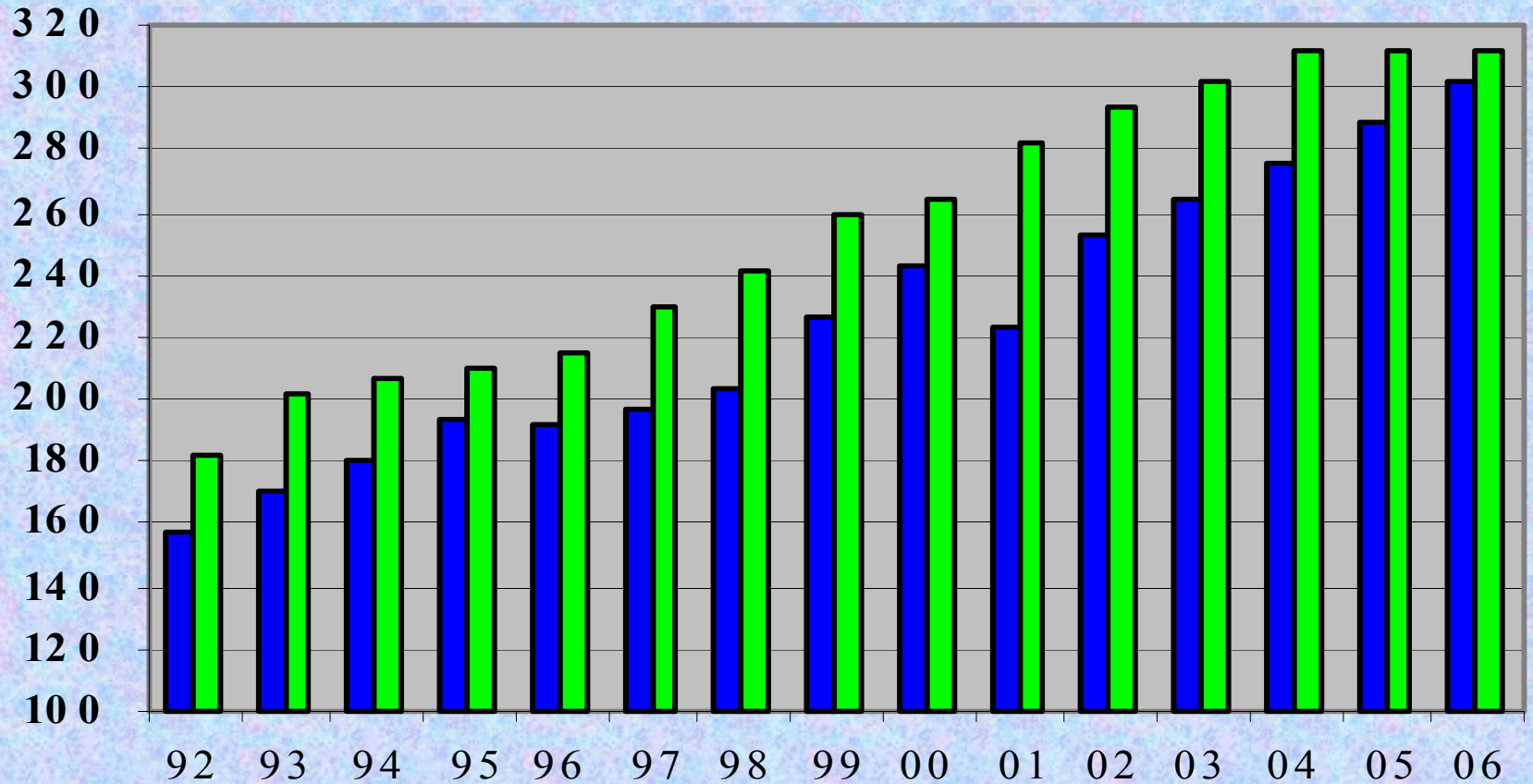
MARKET SUMMARY

- Annual global consumption is peaked at 244,000 mt in *CY 2000* & fell back to 220,000 in *CY2001*.
- The compound annual growth rate over the last 10 years is 4%.
- Expectations for *CY2002* are for an improvement on *CY2001* & thereafter resuming historic growth trends.

MARKET SUMMARY (Cont)

- Global installed capacity is currently 296,000 mt with 8,000 mt awaiting commissioning.
- The Alkaline market consumes 180,000 mt which is covered by existing capacity of 250,000 mt.

ELECTROLYTIC MANGANESE DIOXIDE SUPPLY/DEMAND



■ SALES M.T. Thousand ■ CAPACITY M.T. Thousand.

MAJOR PLAYERS- PRODUCERS

- Tosoh-Japan & Greece 50,000 mt
- Delta-South Africa & Australia
50,000 mt
- Mitsui-Japan & Ireland 43,000 mt
- Xiangtan-China. 40,000 mt
- Kerr Mcgee-USA 26,500 mt
- Erachem-USA 24,000 mt

MAJOR PLAYERS- BATTERY PRODUCERS

- Major battery producers are located around the world with Duracell, Energizer, Matsushita Panasonic, Rayovac & Varta being the largest in terms of EMD consumption.

BATTERY PRODUCERS CHINA

- In China the larger battery producers are Nanfu, Baowang, Zhongyin & Chongqing. There are many other small battery producers.
- By world standards EMD consumption is low but growth & potential is exciting.