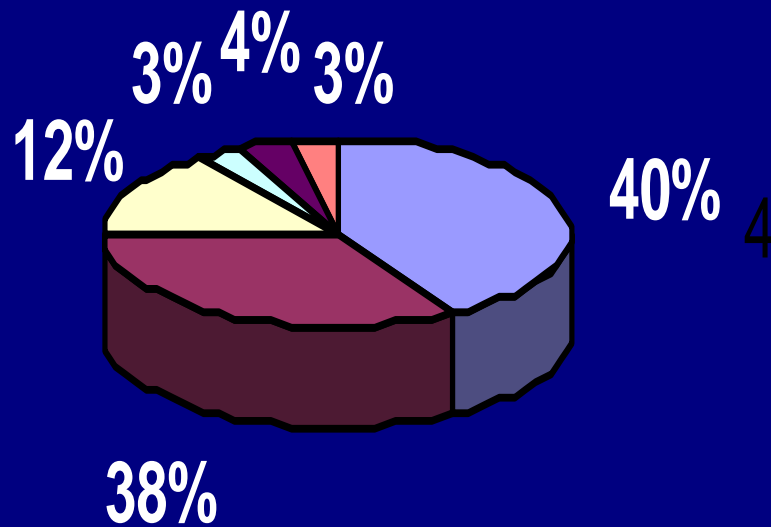


# **WESTERN WORLD DEMAND FOR MAGNESIUM PRODUCTS**

**Randy Beals**

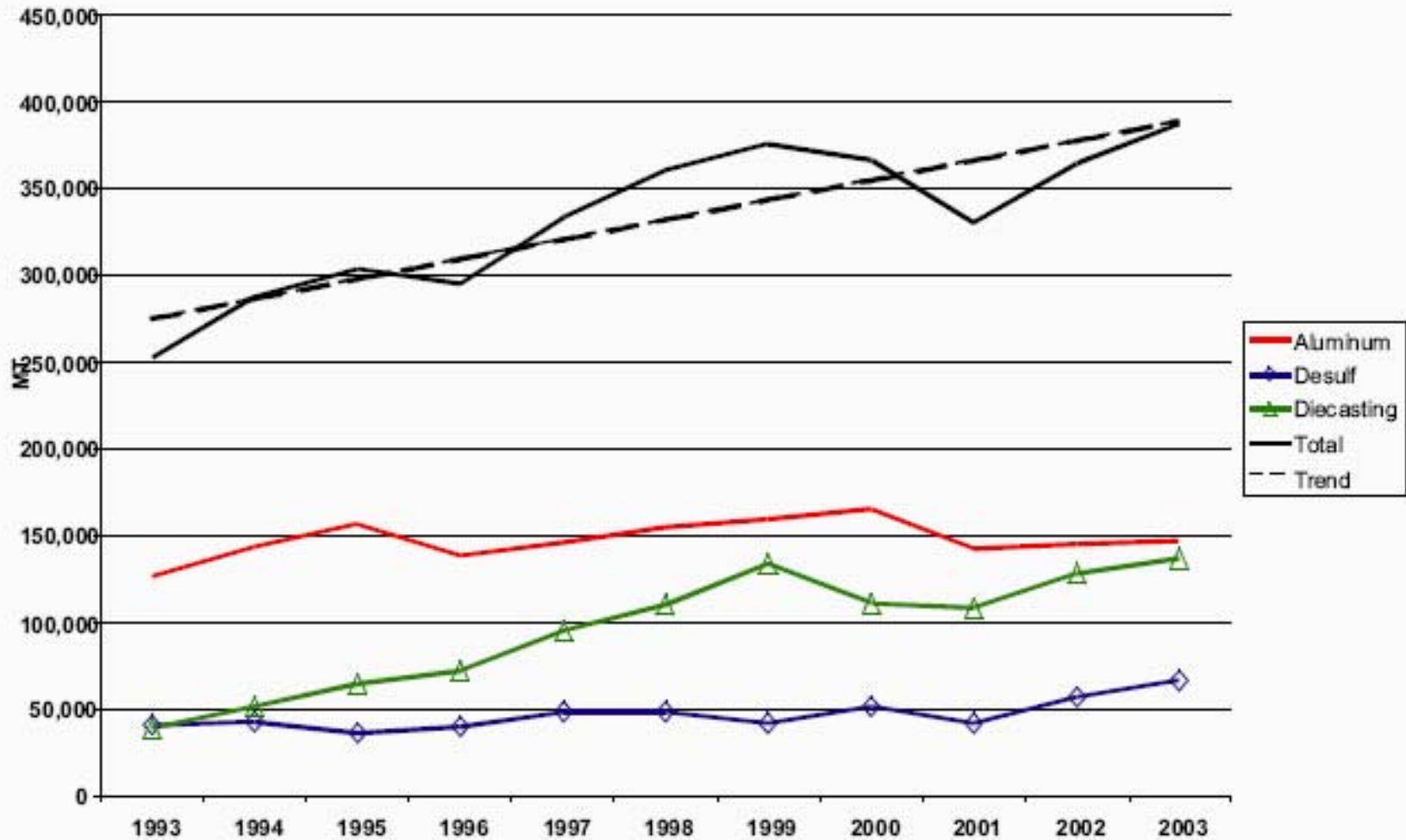
# Industrial Mg Shipments (2003)

WW Volume = 530,000 MT



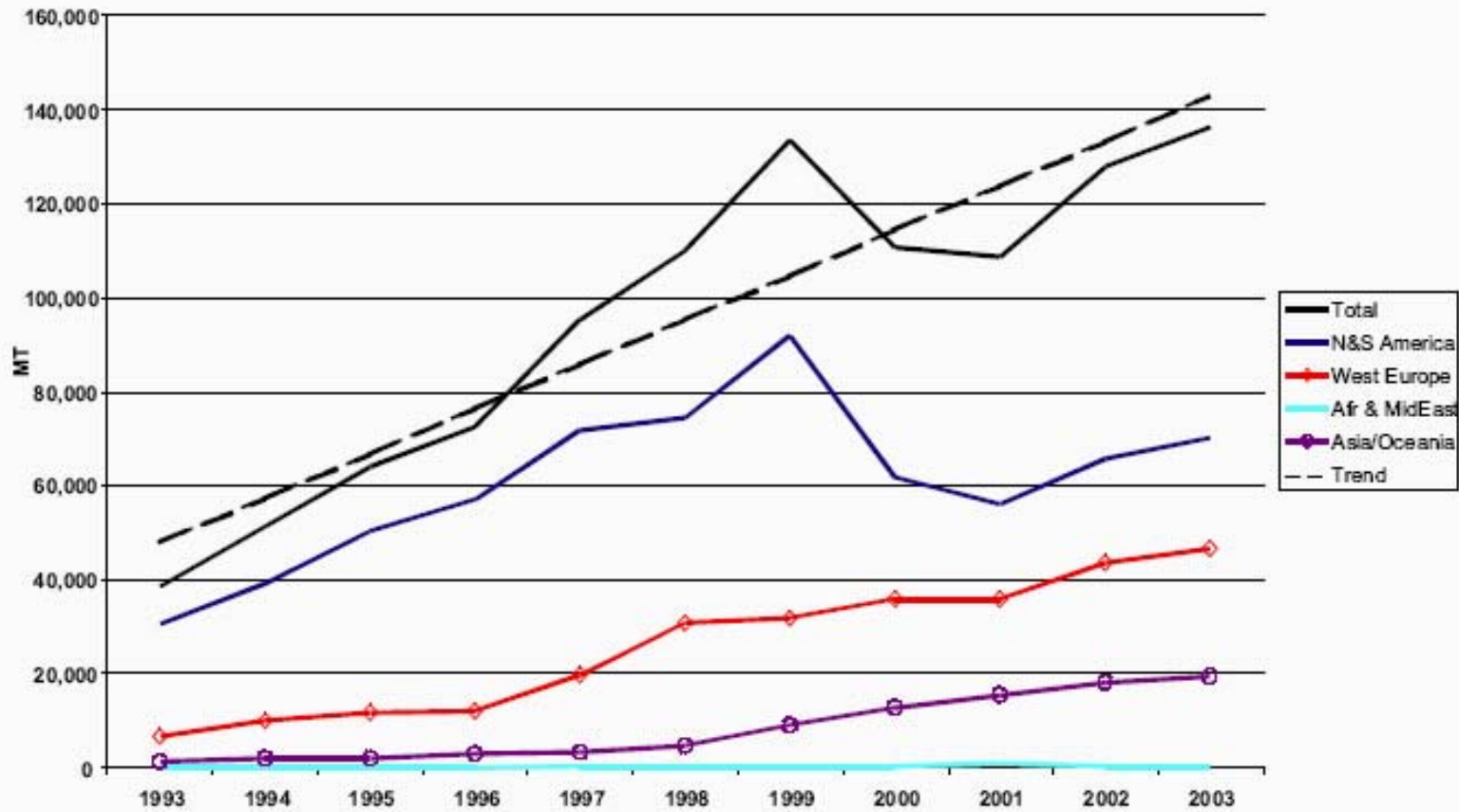
- AI Alloying
- Cast Components
- Desulph
- SG Iron
- Chemical
- Misc

Western World Demand  
Figure 1



Tim Pretzer, COO, President Timminco

Diecasting Segment Demand  
Figure 7



Tim Pretzer, COO, President Timminco

# NA Automotive Trends

Kg

Average Mg Use/Vehicle

4.0

3.0

2.0

1.0

0.0

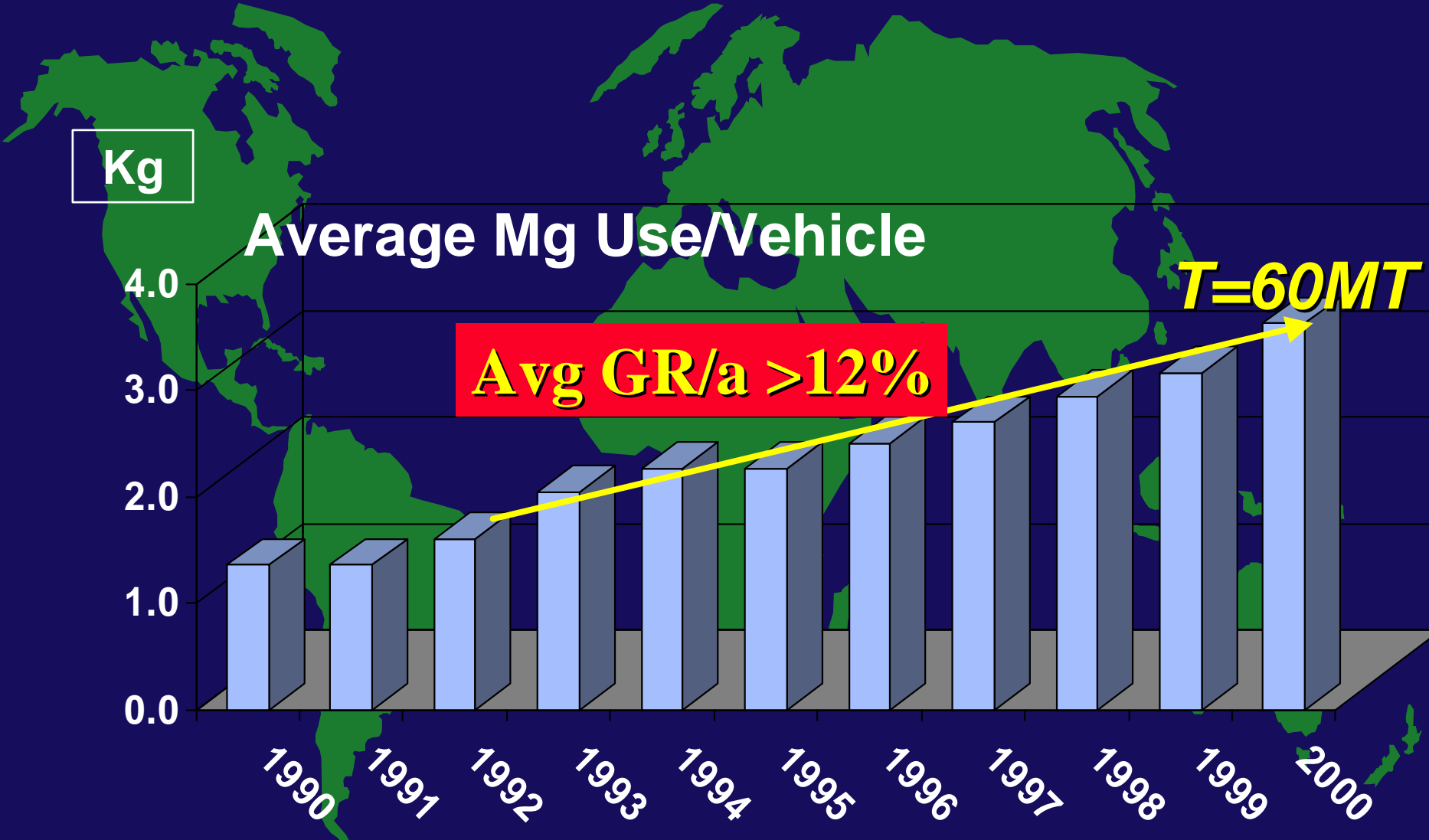
*T=60MT*

**Avg GR/a >12%**

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000

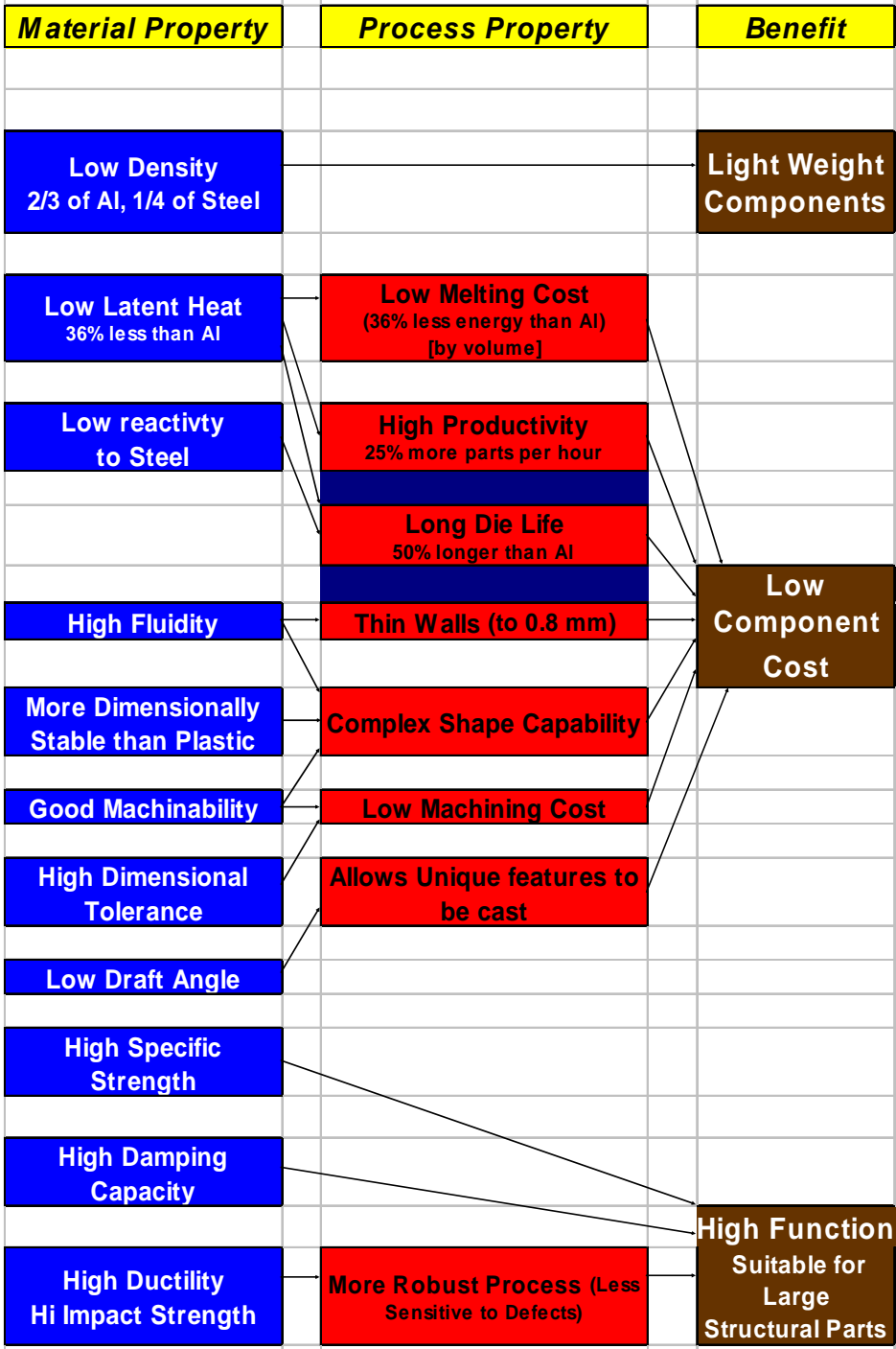
Ref: American Metal Market

Model Year



- **The avg. (1,500 kg) vehicle has ~ 8% Al, i.e. 125 kg.**
- **It has only ~5 kg Mg.**
- **At 1/3% of a vehicle's mass, that's not particularly significant.**

***Why then  
should  
anyone care  
about  
magnesium?***



**NVH**  
**More Fun to Drive**  
**Improve Egress/Ingress**  
**Improved Braking/Acceleration**  
**Increased Carrying Capacity/Payload**  
**Reduced CAFE, Emissions, Fuel Cost**  
**More Expensive Options Possible**

**More Competitive with Al, Pl, St**

**Lower Cost Manufacturing**  
**Improved Craftsmanship**  
**Reduced Squeeks & Rattles**  
**Enhanced Safety (design for crash)**  
**Improved Packaging=More Customer Feature**





## Fuel Economy

- Federal & State
- Competitive Pressure
- Foreign Oil Dependency

## Emission Standards

- Federal & State Requirements

## Safety

- Reduce Cg
- Brakes, Airbags
- Crash Structures

## NVH

- Stiffness
- Insulation

## Performance

- 4W Drive
- Traction Control
- Powertrain Features

## Heavy Extras

- Convertibles
- Power Accessories
- Electronic Devices

It seems likely that, sometime during the next two or three decades, a confluence of circumstances will result in radical changes in transportation vehicles and fuels. These circumstances could include:

- Periodic oil supply disruptions and/or price volatility.
- Increasing public recognition of the vulnerabilities associated with continued growth in world oil demand.
- Greater consensus among government leaders regarding actions to slow the growth of climate change emissions.
- Increased determination by government leaders to support strong policies to slow, and then reverse, the growth in national or world oil demand.
- Sustained higher conventional oil prices resulting from either monopolistic pricing or a peaking of world production levels.

**Tom Gross, DOE (retired)**