

#### Sulphur (S)

Top Producers: U.S., Canada, China, Japan

Sulphur is soft and yellow. It comes from oil and natural gas. It is used to produce almost evzerything we eat, wear, and use. Sulphur, combined with rubber and heat, makes hard hockey pucks.

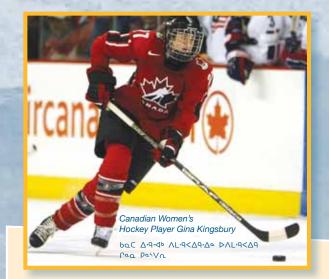
Sulphur goes into sulphuric acid, used for many things, including fertilizers and truck batteries.

#### **>5.49U**

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## ICE HOCKEY

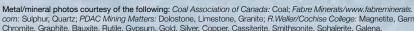
Hockey might have originated as Aboriginal lacrosse or Mi'kmaq field games. Modern hockey started being played in Montréal in the 1870s. From there, it spread to the U.S., and then Europe. The sport was added to the Olympic Games in 1920.

#### ·ΟΡΥΙΘΕΙΑΙ

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#### www.MiningMatters.ca

Editors: Victoria Stratton, Kathy Bevan, Andy Fyon Project Coordinator: Lesley Hymers, Barbara Green Parker



Other photos courtesy of the following: Skate Canada: Patrick Chan; Daktronics: General Motors Place scoreboard; Getty Images: Clara Hughes, Gina Kingsbury, Bradley Bowden and Todd Nicholson, Cindy Klassen; Kathy Bevan: Richmond Oval; Frank J. Zamboni & Co., Inc.: Zamboni® Ice Resurfacing Machine (Zamboni and the configuration of the Zamboni ice resurfacing machine are registered in the U.S. Patent and Trademark Office as the trademarks of Frank J. Zamboni & Co., Inc.).

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## FIGURE SKATING

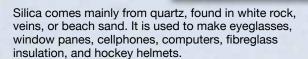
Figure Skating started in the 1800s, with skaters following defined patterns. In the 1860s, skate blades changed and dance and creative moves were introduced. Toe picks, added in the 1870s, allowed skaters to jump. Gradually, moves became more complex. In 1997, Canadian Elvis Stojko completed the quadruple/triple jump. The first Olympics to feature Figure Skating were held in England, in 1908.

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## Silica (SiO<sub>2</sub>)

**Produced widely** around the world



Amethyst is a purple quartz that is used in jewellery.

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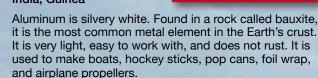
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## Aluminum (AI)

**Top Producers:** Australia, China, Brazil, India, Guinea



A 7.25 tonne block of aluminum can make a sheet of aluminum foil over 12.5 km long.

#### · **イ**ハッbハゥ (AI)

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Canadian Speed Skater

ρσς διγςΔο σνγςΔ

Clara Hughes

com: Sulphur, Quartz; PDAC Mining Matters: Dolostone, Limestone, Granite; R. Weller/Cochise College: Magnetite, Garnierite, Chromite, Graphite, Bauxite, Rutile, Gypsum, Gold, Silver, Copper, Cassiterite, Smithsonite, Sphalerite, Galena.

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# Graphite (C)

**Top Producers:** China, India, Brazil, North Korea, Canada



Graphite, a soft form of carbon, is grey or black. It easily transfers heat and electricity. Graphite is used to make pencils, fishing rods, golf clubs, bicycle frames, hockey sticks, and oils for truck engines.

Pencils, once made with lead, now use non-toxic graphite cores.

# **ゅくくって** (C)

LY bCSDSCbUb

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#### Titanium (Ti)

**Top Producers:** Australia, South Africa, Canada, China



Titanium comes from the minerals rutile and ilmenite. It is lightweight, durable, and withstands very hot and cold temperatures. Titanium does not react with our bodies, so it is used to make replacement hips and knees. It also goes into many products like hockey sticks, skis, springs, and engine exhaust systems.

Titanium dioxide is used for white pigment in everything white, from paint to toothpaste.

#### C<sup>†</sup>Uσ<sup>†</sup>L (Ti)

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C>Uσ>L C>D64>C ΔSA<Ca 6.4Λ9ρσ69σσ. 46 6ρα 9000 P.OKPO, CAGO SONBABOO 64 PYSAUDOOS.

#### SPEED SKATING

The first organized Speed Skating race took place in 1763 in England. The track was 24 km long. Lighter, sharper, and longer steel blades were introduced in 1850 in North America. Canada's first recorded race took place on the St. Lawrence River in 1854. In 1897. Norway, Germany, and Canada competed in the World In 1924, Speed Skating became

part of the Winter Olympics.

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# CUTTING EDGE

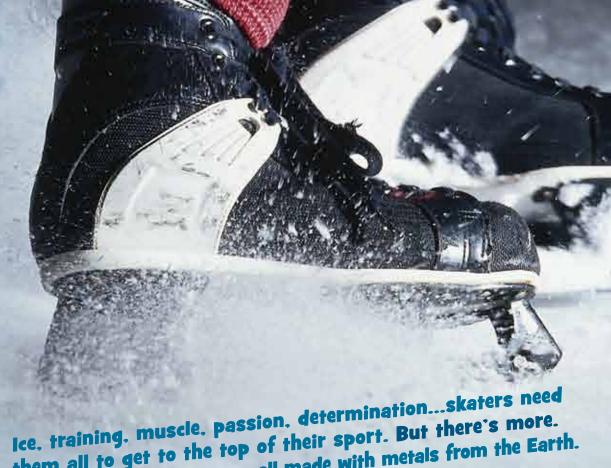
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# SKATES

The first skates used animal bones 5,000 years ago. Iron skates were made in 200 A.D. In the 1500s, Dutch people attached wood slats with blades to their shoes. Modern skates are made of steel and are used by hockey players, speed skaters, and figure skaters.

#### **VFC4PP**

σCL ΛLC</bo> ΡΟΦ. Λ. ΑΛΑ ΛΕΟΘΕΕ Ε. ΑΙ σου δροσφαίος Τ. 200 ΡΦΡΡΡΟΦ ΤΓΛΟΘΟ ΤΡΔΛ ΛΟΔΙΟ ΛΟΛΟΦ ΡΕΡΡΟΘΟ.  $\nabla d < \Gamma d \cdot d \cdot D \wedge L d \cdot \nabla < \Delta q \cdot \rho$ ,  $\rho \mathcal{L} b \wedge C \nabla \cdot d \cdot \phi$ ,  $b \wedge d \wedge d \cdot \phi$ LL/a·Δ<σΡ ΛLC∇·Δσ<sup>6</sup>.



them all to get to the top of their sport. But there's more. The equipment, the arenas...all made with metals from the Earth.

MINING MAKES IT HAPPEN

 $\mathsf{L} \cdot \mathsf{p} \cdot \mathsf{d} \cdot$ ΥΡαΓΡΟΥΡΟΘΟΡΑ Λ·ΔΛΟΘ ΔΡΒαΘ ΒΡΡαΠσουρα. Λ·ΔΛοσο Βρα 900 Bpa Parlbpa.

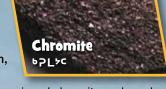
**Stee** is made from iron, carbon, nickel, chromium, manganese, and molybdenum. It is one of the most commonly used materials. It is used in buildings, tools, trucks, snow machines, outboard motors, axes, shotguns, snare wire, conibear traps, and sports equipment. Steel is often reused and recycled.

#### V.4VP

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#### Chromium (Cr)

**Top Producers:** South Africa, Kazakhstan, India and soon Canada



Chromium comes from the mineral chromite and can be highly polished. It is used to make kitchen sinks, skate blades, and hockey mask cages. Chromium chemicals are used in the tanning of moose and deer hide, and in coloured paints.

Chromium, found in small amounts in apples and cheese, help to keep you healthy.

#### bL~b.4\PPQLbb (Cr)

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bPFbL, ANP <aP AbLba FSFGbb PS, ·APA·VLba פללפור

#### iron (Fe)

**Top Producers:** China, Brazil, Australia, India, Russia

Magnetite b·∆d∧r9Lbb ∧·⊲∧b Iron, the most common metal on Earth, comes from the minerals named hematite and magnetite. It is the main ingredient in steel, used in skate blades, hockey mask cages, trucks, snow machines, nails, and building supports.

Iron, as part of steel, is used 20 times more than all other metals combined.

# bd/·b/bb (Fe)

LY bCJDJCbUb

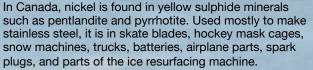
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#### Nickel (Ni)

**Top Producers:** Russia, Canada, Indonesia, Australia

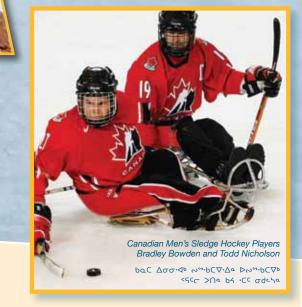


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#### SLEDGE HOCKEY

Sledge Hockey started in the 1960s in Stockholm. Sweden. Players sit in a metal frame on two Ice Hockey skate blades. Canada started a team in 1982. In 1994, the Paralympic Winter Games in Norway introduced Sledge Hockey. Team Canada won their first Olympic gold medal in 2006. Canada, Norway, the U.S., Germany, Sweden, and Japan have the best Sledge Hockey teams.

#### 

∾5.6C√∆ ΛΙ.9<Δ9.ΔΦ Ι.√υ σСι ΡΙΓΓ6U<Φ 1960  $b\Lambda\Gamma + b\cdot \nabla \cap \cdot \cdot C^bD^L$ ,  $\cdot \cdot \Delta \cap \circ$ .  $D\Lambda L \cdot 9 < \Delta 9^b\cdot \cdot 4PC\Lambda \cdot 4^b$  $b\Delta \mathcal{N} \cdot \Delta \mathcal{N} \cdot$ LVF Co pbdob rulphdes dd.  $\sim \sim \sim \sim \sim \sim \sim$  $\Lambda Ld\cdot \nabla < \Delta q\cdot \Delta q$ . bac  $\cdot \Delta q\cdot d$   $P < P = q < \sigma^b$   $\sigma b^q$   $< P = q \cdot \Delta \sigma$ 7.6 2006 6PPP. dob. bac, ·as·V, PPJdLapb, ULo, ··ΔΠα, 64 U<α ·Δα·α L·αν ζαργ·αν DDL ~6·bCV·Δ ΛLd·∇<Δ9·Δσ b▷CΓΔ·Ϥι.







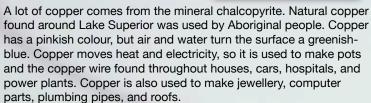
**Bronze** is made of copper mixed with tin. Over 5,000 years ago, people learned to harden copper with tin to make bronze tools, weapons, armour, and building materials. Today, bronze is used to make bells, musical instruments, medals, bearings, electrical connectors, springs, and roofing materials.

#### D1.0010

5,000 CANSO DCOP DO POOCON DOCUMENTE PLODINAPAL ΔΥ-ΟΛΟ ΤΡΟΔΙ-ΟΙ ΒΕΙΤΕΝΕΝ ΑΙΘΑΙ ΤΡΕΘΕΡ ΕΣΙΙΘΕ ΕΝΙΤΟΙΑ 4CCb $\sigma$ ,  $\rho$ N $\sigma$ 9· $\Delta$  4CCb $\sigma$ 9,  $\rho$ N $\sigma$ 9· $\Delta$   $\rho$ P $\rho$ 9· $\rho$ 8 $\sigma$ 9,  $\sigma$ 9· $\sigma$ 9 • 46Δ9•Δ < 4< 1 C baa. Dar 662. Par 2014 Par 201  $L\cdot U \wedge \Gamma baa$ , PDP9- $\Delta$   $A < \Gamma Cbaa$ ,  $< Pag-<math>\Delta$  PPa- $A \cap \Gamma baa$ ,  $\cdot A \wedge ba$ υ<sub>β</sub>Λθηγιραφ, Λ·ΔΛα δαργγλα, 64 α<·6αφ.

## Copper (Cu)

**Top Producers:** Chile, U.S., Peru, China, Australia



Small amounts of copper in our food keep us healthy. In our bodies, copper works with iron to make blood strong

#### **▶**5.4∧७ (Cu)

Ly bCSDSCbUb:

rc, pridlapb, >>, ba, dicsch

\Λως βρλοιασία δρλαζού Του ασσάνο. ·αα δι·αλο ΔΛυΓ<sup>1</sup>·6ΛΡ<sup>2</sup>, ΔΛ C<sup>9</sup> 610Λ<sup>1</sup> 9L 6σΛ·Δ<sup>1</sup> Δσρ<sup>2</sup>·Δ<sup>9</sup>d<sup>2</sup>. Ρ<sup>1</sup>·ΔΛ<sup>6</sup> 64 ·◊ΛραΔ<sup>ω</sup>ἀU·ΔρΣἀα. ▷Υ·◊Λρ βά ΔΛ◊ CΛ<sup>ω</sup>d σΛσΓΛτα<sup>6</sup>, LLbCΛd<sup>6</sup> bDaΓDJΓbUPa, ΛLJb·ΔΓbaa boardsrbupa, by a<.baa.

ΔΛΓ <aP Δλίδα DD·V DY·ΔΛο ΓΓΙ ΟΓΓλο ΓραΓ Γροβοσλο. PF.abFa.95a.

#### Tin (Sn)

**Top Producers:** China, Indonesia, Peru, Bolivia

Tin comes from the black mineral cassiterite, but it is silvery-white. Around 3500 B.C., people discovered that mixing it with copper made a harder metal, bronze. Tin is used to coat steel containers and in solders to join pipes and wires.

Tin is used to make glass for windows and automobiles. Melted glass poured onto melted tin spreads out to form a level surface.

#### **b** ው ለ **b** ላ **b** ላ **c** (Sn)

Ly bCSDSCbUb:

b<sup>2</sup>a. Δ°2πα. >2. >c<b

δογργρ<sub>ο</sub> γ·αν<sub>ρ</sub> ⊳σιγρ<sub>σ</sub> ργρη·αν<sub>ρ</sub> αν<sub>σ</sub> ργουνος, αρ<sub>γ</sub> ·αν<sub>γ</sub>ργ 64 AA. 7.6 DA 700 3500 B.C., DPDOP PAOCON BPCOOLING ΡΥ∙ϤΛάσ ΫΡΡΦΓ Ιώρ∙ϤΛΡΟΓΡΩΦ, ΟΥۥΑ ΡΑ•Ανρ, ΡΡ∙Δ ροςργρρ Vadbybaas.ap βρου αραιβνηυρο Δαιβρανρα βά 

*Φρ* / *ΦΛ Φ* / *Φ* bσοργουο · Δηγοαλο ΔΔL ορΔς σοργουο γΔς ος·ΔΛΡCL6.

# KEEPING SCORE

communities and large cities. Vancouver, B.C., hosted the 2010 Olympic and green colours of the video picture.

#### ∇ΛΓ ααbC·<</p> Ο О <

ΛΙΟ-ΤΚΑΘΙΔΑ ΡΡΙΒΑ ΡΡΙ ΒΑΟ ΦΡΑΒ ΛΙΠΤ-ΔΑ. ΛΟ ΦΑΠ Ο-ΔΟΤΑ 64 ΡΓΟυσο 6ΔΓαγερρα Λεα·∇<Δ9·αο 64 6α·αΛ·αο. <αα>ς, Λν, PCSPPDCFD  $\Delta$ SPb $\sigma$ · $\triangleleft$ a  $\exists$ ·b 2010 PA>b  $\Lambda$ Ld· $\nabla$ < $\Delta$ 9· $\Delta$ a  $\Delta$ \DeltaL δάσ Λοδοσία Τύ C° αίανη 22,000 kg ράλη δσία. DDL δρογ ▷ΛΛΔ9Կ⁰ bϤσΛαΔbσ·Ϥ⁰ P▷«Γ▷ΛΓbU ϤͰσb⁰ ΓΓԿ·b⁰, Γ▷ϧ⋅Ϥʹʹ·b⁰, b4 ΓϤσΛΓΡω・Ϥʹ٬-bι ΔΔL 6ϤΔαU<σΡL6.



Athletes compete to win medals. Olympic medals are special and say something about the country where the Games are held. The Vancouver 2010 medals featured Aboriginal art on discs shaped to represent rolling waves, drifting snow, and Canadian mountains. The gold and silver medals must be made from almost pure silver metal. The gold medal is covered by a thin coating of pure gold.

#### p<br/> boto<br/> b<br/> boto<br/> b<br/> b<br/> b<br/> b<br/> b<br/> b<br/> c<br/> b<br/> c<br/> b<br/> c<br/> c<br/> b<br/> c<br/> c<b

<Pa $9\cdot\Delta$  PPa $\cdot$ drd $\cdot\Delta$ aa dar Prdac $\cdot$ baa b4 dar PcParbu  $\Delta\Delta$ L δρΔΛιρα·σρ δο ςραθ·σ δρα·σιρ·σσ δησσιρρη·σσ Φσσανιά Γλαναθιάσιο CΛωρ Δαναιρίο Δντωρίο, ρι Διικρονίο Δντωρίο da, by bac  $\cdot$ ara. by Da Dy $\cdot$ and by  $\cdot$ anyrad  $\cdot$ pag $\cdot$ a  $\label{eq:continuity} \mathsf{PPa} \cdot \mathsf{APD} \cdot \Delta \mathsf{a} = \mathsf{PaP} \; \mathsf{DVPbU} \cdot \mathsf{A} = \mathsf{AP} \; \mathsf{VA} \; \mathsf{APP} \;$ Λ·ϤΛι. ∇·β ·Δι Ργ·Δνσι Κραθ·Δ Ρρα·ϤΓΡ·Δι ΡΔ.Γ·Δ·96/6 



Coal

**Top Producers:** 

 $\Delta b \cdot \nabla V L D$ 

LY bCJDJCbUb:

South Africa, Russia

China, U.S., Australia, India,

Coal is made of carbon (C) that formed from plants that grew in

great swamps long ago. Over many years, dead plants formed

layers that got squeezed together, heated, and changed into

Canada, Aboriginal people collected coal for their fires. Some

coking coal, is added to iron to make carbon steel. That steel is

coal. Coal is burned to make heat and electricity. In parts of

coal is very soft and some is very hard. A hard coal, called

Coal is used to make many items such as soap, aspirins,

solvents, dyes, and plastics and fibres like rayon and nylon.

 $\forall b. \nabla VL \Rightarrow CP \Rightarrow \forall b. \nabla \cdot \forall Vq \Rightarrow (C) \Rightarrow \nabla CP \Rightarrow$ 

900 βσς. Δρίβρα βρδι βρίβρο. Το βλίδρο Τρο. Το βλίδρο Β

ρρο·Δσ·Δι. bσ>Lbρα bσC·ΔρLbρα ρΔσ ΔλρC·Δλοα δρασ

 $d^4\sigma^4dC\Pi b^4$ ,  $d^4\sigma^4dC\Pi b^4$ ,  $d^4\sigma^4d\sigma^4bb^4$ 

ΔΡ·ΔΛΓυ. ÞÞ·∀ ΔΡ·ΔΛΓυ υργου ΓΡ«Γ ργγορασ•Δ» 64

>ΡΡΕ·ΦΡΟΦ Φ· Φσ ΦΡ·ΔΛΓυσ ΦΡ>C·ΦΡ·Φ. Φσς ΦΡ·ΔΛΓυ

ΔSA<Ca VDar DSrbUPa ·AbΔbaa, Anbaa, Pr rlaa, b4

Crushed stone, sand, and gravel are very common geological

materials. Dolomite, limestone, and granite are often mined for

aggregate. Aggregate is used to make roads, airport runways,

house foundations, sewers, and mixed with cement, fertilizer,

It takes about 50,000 tonnes, or seven dump truckloads, of

 $\Delta \mathcal{S} \subset \Delta^{\circ} \subset \Delta^{$ 

 $PAC \rightarrow PLPACPA \rightarrow PRACPACPACPA$ 

LP.65 50,000 Das CHN</br/>
Abdrba, 9L b4 J.65.5 . VAJbJ DC</br>

 $b\Lambda\Gamma C< C^b, \Delta\cdot \nabla\sigma \ bP\Lambda^{\omega}P\cdot \nabla< D^{\alpha}\cdot C \ dr\sigma^b \ PD\Gamma PU^b \ V\Gamma^b \ PC\Gamma C^{\gamma}$ 

Gallium is not common in the Earth. It occurs mixed within other

minerals such as the zinc mineral sphalerite. Most mined gallium

is mixed with arsenic to form gallium arsenide, which is used to

make light-emitting diodes (LEDs), laser diodes, and solar cells.

Solid gallium melts in the human hand. It becomes liquid near room temperature and can be used to make high temperature

bch b·Δα Γλ·∇ αρβαβ ΓαλΙδ. Δ.Λα·βα ∇ραΓ LL·ΔλΙβρα

**ΒΓ**Ι C σο ΦΕ ΕΡΘΩΡΟ Δ.Δ. ΑΡΘΩΡΟ. CPAG σΛ. ΔΒΓΩ ΒΑ

bct ρΔι C·bbΓσbU Λρ>·Δ> ρριργργ βς Δεγαίς,

·45dorbae. 64 PZZb bDer ApplbPe acrcbae.

dCb/a <pa Λ·Δναα CV, αρ γ<> Δορ γ<> δρα ρδα ροσφρίδα στο γ

aggregate to build one km of Trans-Canada Highway.

V<60 9da0 DOPDSP6U·00 ΔΡ·ΔΛΓυ60 CΛOd ΟΛ6, U·ΔΛ·60

LOPPE. JEPYBOSE. ANYBOR. BY BOYPPYPE BY OCPHE

bΔsa.bρa bobρa υ.σa b4 a>.ca.

Aggregates

**Produced widely** 

around the world

and construction materials.

 $\Gamma \wedge \Delta P L_{\rho} \supset \sigma \cup D \nabla \Delta P \Delta \cdot \nabla \cdot \nabla \Phi$ 

**Φρ∙Δ ΦΥΓ**Ε**Ι**σδ.

Gallium (Ga)

**Top Producers:** 

thermometers.

**して ナ** (Ga)

LY bCJDJCbUb:

له و, LLσ, b٢٥١, ح, حاص

baspsub asparbandb.

China, Germany,

Kazakhstan, Ukraine

 $PbV \sim b \cdot \Delta < D \sigma \cdot C \ \Delta L Q P$ 

 $\nabla \mathcal{N} d < \Gamma \Gamma b U P^a$ .  $D d D D L^b C$ ,  $C^{bL^b} C^a$ ,  $b A b A C^b C$ 

CdσbU⁰ ϤͰσb٩, ΡΠbσ σC∙ΔΡΓbσ७, b4

CGas bac box < 10 DC < or ba.

used to make buildings, bridges, ships, and cars.

υρα, Pridlapb, dicach, Δοηλ, ADC danh, ash

#### Gold (Au)

**Top Producers:** 

China, South Africa, U.S., Australia

Gold is very rare. It is soft, conducts heat and electricity, and is not damaged by the weather. Gold occurs as a pure metal and also within other minerals. It is used mostly to make coins, jewellery, and ornaments. It is also used in medical equipment and the electronic components in computers, cellphones, and ice resurfacing machines.

Gold coatings on windows help keep buildings warm in the winter and cool in the summer.

#### **▶5.Δ**∾σ۶ (Au)

LY bCSDSCbUb:

Uta, YDC d<nb, PrJdLapb, dycact

Dጎ· $\Delta$ የን የነው ላለቦ ላንተ. ውረየለየተ, የተተባርየው የላ ·ላተየ  $\Delta^{\omega}$ dU· $\Delta$ < $\Delta$ 9Lba, b4 b· $\Delta$ a 9da  $\Gamma$  $\Delta$  $\Gamma$ L $\Gamma$  $\Lambda$  $\Gamma$ 9Lbb b4 $\Delta$  $\Gamma$ · $\nabla$ <br/>b 4.600 5.000 5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00ΦΕΡΡΕΝΙΚΑΝΤΟΝ ΑΝΤΟΣΙΑΝΤΙΚΑΝΤΟΝ ΑΝΤΟΣΙΑΝΤΟΝ ΑΝΤΟΣΙΑΝΤΟΣΙΑΝΤΟΝ ΑΝΤΟΣΙΑΝΤΙΕΝΤΟΣΙΑΝΤΟΣΙΑΝΤΟΣΙΑΝΤΟΣΙΑΝΤΟΣΙΑΝΤΟΣΙΑΝΤΟΣΙΑΝΤΟΣΙΑΝΤΟΣΙΑΝΤΟΣΙΑΝ ~σ>·ΔΛσο, αλσολλαο, 64 Lλσοβαα. 64 ΔΔL Βαρολοβου. Δα LUPPIA ASPCHAL BY BOOK APPLERS LLBCAde. b<<Γ·Δρουρα ρρο·Δαα, δί δων·ρδραασισο ισρυγισο.

ΡΥ·Δοσόσο βΡΓΑΡΟ·Δ ΓολΡσουο • ΔΥΓοσο ΡοΓΡο• Δόγοο ·ΔρΩρο ΡΛ>ρ ρλ CP> 7.ρ ρσΛρ.

# Silver (Aq)

**Top Producers:** Peru, Mexico, China, Chile

Silver occurs as a pure metal and also within other minerals. It is soft, conducts heat and electricity, and can be highly polished. Silver is used to make coins, medals, jewellery, silver spoons, batteries, catalytic converters in vehicles, electronic components, mirrors, and solar cells, which make electricity from the sun.

Silver kills germs. It is used in antiseptic bandages, bacteriareducing cellphone covers, odour-reducing clothing, and water purifiers.

#### **·ላለነዖ‹አσኦ** (Ag)

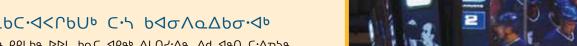
LY bCJDJCbUb:

> 7, 7676, ሁኔඛ, ቦር

 $\cdot$ 4 $\Lambda$  $^{\}$  $\rho$  $\circ$ 0 $\tau$ 5  $\rho$  $^{\}$ 0 $\tau$ 7  $\rho$  $^{\}$ 0 dCP  $\Delta CPP$   $\Delta CPP$   $\Delta CPP$   $\Delta CPP$   $\Delta CP$   $\Delta CPP$   $\Delta CP$   $\Delta CPP$   $\Delta^{\omega}$ dU· $\nabla$ < $\Delta$ 9Lb=, b4 CP · $\Delta$ Λ\bΛb· $\Delta$ b $\sigma$ · $\Delta$ . · $\Delta$ 4  $\Delta$ Λ\P $\omega$  $\sigma$ > ΔΓΟΚΡΟΙΑ ΒΡΙΔΑΙΟ ΝΟΥΔΑΙΟ, ΚΡαθ.Δ ΡΡα. ΟΓΡαφ. αΛσΓΛζα<sup>6</sup>, ·ΔΛ<sup>1</sup>Ρνσ<sup>5</sup> ∇Γ·δα<sup>6</sup>, ΔσΓΡ<sup>1</sup>, ΦC<σ Δ<ΓCδα<sup>4</sup>,  $bb^{\alpha}\Gamma d^{\alpha}PLbP^{\alpha}$ ,  $bb^{\alpha}\Gamma b^{\alpha}DLb^{b}$   $\Delta^{\omega}dU$ .

Δαν-Δισυών δραγονόα · Δλιροσταα. ΔΔι Δυακτα Γ·ΔοΓόγορο ρρώρδοο. 64 σΛ <>660 ΔΛΟΚΟΟ.

Ice Hockey is part of Canadian culture. It is played and watched in small Ice Hockey games in an arena that has a large video scoreboard weighing more than 22,000 kg. The scoreboard uses metals to create the red, blue,





In the Arena ... MINING MAKES IT HAPPEN

ΛοΠο ΛLd. V<Δq. ΔοΓσο.... Λ. «ΛΛq. Δσο bpa qdaa bparlbpa.

**Top Producers:** 

Gypsum formed long ago when

leaving it behind on dry ocean beds. It is soft and has many colours: white, grey, red, brown, and yellow. Gypsum is used to make construction drywall, caulking, paint, and Portland cement, an ingredient in concrete.

Teachers use coloured chalk to write on blackboards. That coloured chalk is a type of gypsum.

#### **CaSO**<sub>4</sub>2H<sub>2</sub>O)

Ly bCSDSCbUb:

υνα, Pridlapo, ανςα, εννα, bac

Γ<5L βΔΓβΠβ Τρφ δρλογραφοία αν βσλίβρος δραφοία</p> bρασΔιουρα, αΛ C<sup>ω</sup> γρασ <αdCLbρα ορΔι ργοΓιαρ<α. ΔΛΓ Δ/b b4 V<b Δα/αU·Δο: ·Δ<, ·ΔΛ\b, Γ\·b, LbUD\·Δ, 64 DY.A. PSYL ANASPPBU BOOF DNPBUB ANDO AYLDB  $bdb\sigma\cdot C$ ,  $P>\Gamma^{\omega}P\cdot db\Delta b^{\alpha}$ ,  $\int \sim \Lambda b\Delta b^{\alpha}$ ,  $bdd^{\alpha}$ ,  $bdd^{\alpha}$ ρ∇λα<ςρ CV<sub>0</sub>9 ρρλιρηρ ρ∇λαςα<ηςηρ.

DPPOAL96 DC<720.4 V<60 bDa7aUob · Ub DDSAD6.46 *β*Δ*Γ*L*β*U·*Δ*β *β*Δ*Γβ*ΓΛΔ*β*σ·*Δ*β. ΔΔ·∇ · υβ ΓρL *β*ΡραΓ *β*Γρυβ PSSL PDarb.

# Limestone (CaCO<sub>2</sub>)

**Top Producers:** China, U.S., Russia, Japan, Germany

Limestone is a rock mostly made of the mineral calcite. Calcite formed from the remains of corals and sea shells that accumulated long ago on the beds of warm oceans. Limestone is a key building material, cut into building blocks or crushed to go into cement. Limestone is also used to make glass, including windows, bottles, windshields, and fibreglass insulation.

The Great Pyramid of Giza, one of the Seven Wonders of the Ancient World, is made entirely from limestone.

#### C>L1) (CaCO3)

LY bCSDSCbUb:

▷∿▷↳ β<Λ⋅Δ♭・Ϥ↳ ∇ፖ∖↳ βϤ ἀϹ₽ϧϐ βΔ∿ҩάΖ・Ϥϥ βΡϤϭ Γ·σσορισρ σσενρ ρουδισρ διρεσρ. Θα σλσ Γισρ ΡϹ<ΠΗ ΦΔΛΦ<ΠΗ •ΦΙΔΦ•Δ Φ<ΓCbσ, Φβρωρ>Φρσ•Δη ΘΓ 64 VPΛ"P·V<Dal Γ·ΔΛ6σ626. Γα·Δ ΔΔL Dar Drr6U·Δa ·Ϥ\Γbaλda, Cd ·Ϥ\Γbσ٥ bΔΛϤ<CPa, JUbλda, DC<σ 

ΡΓ Γ>-◊ΙΔΔ6σ9·ΔΦ ΔΙ ΡΥ, ΓΟ·◊ ΥΝΟ ΒΡΓ ΙΙΒΥΦ. ΒΕ ΔΥΙΓ·ΔΦ TOO DCOO FY.V C>LLOO POSAL OPDSTOUG.

#### Zinc (Zn)

Top Producers: China, Australia, Peru, U.S., Canada

In Canada, zinc comes from a zinc mineral named sphalerite. Zinc minerals usually occur with copper or lead minerals. A lot of zinc is used for galvanizing, a process that puts a th layer of zinc on iron and steel to prevent rusting. These zinccovered metals are used in vehicles, bridges, and building construction. Zinc minerals go into glowing dials, X-ray and TV screens, paints, and fluorescent lights.

Humans, animals, plants, and even tiny organisms need zinc to function. Zinc helps us taste and smell and keeps our hair and nails healthy.

## **구호b** (Zn)

LY bCVDVCPU

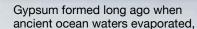
υνα, αιςςς, >P, Pradlaph, bac

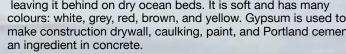
DDL bac. DD·V 200 barbuo Λ·αΛο Dorlbo αλαρο \<25. ¿σς ΛισΛρ ρου ρρουργομο ρισσορία αΓ ρε ρνισγασρ <ΦΡ ΔΔΙ ΔΛΟΓΟΝ ΔΔ·Τ ΤΦ ΔΔΙ ΔΙΓΦ ΒΕ ΔΙΑΙΝΟ  $\Gamma \land \cdot b \land \Gamma \land \neg \land \neg b \land \neg b$ ΟΛΡΟυρα 6.4500ρα ΛΓσοα, 6.476α 64 ΠΛΙλαυλροα,  $\mathcal{L} \wedge \mathsf{L} \wedge$ 

ΡΛΙΠΤΟ. ΔΙΑ·Δωο. 9000 οσ C·ΔΡΙΒΡΟ. 6470 Ι·Δι 6462ΡΟ 9000 DOC. DOCO of LOD LOVELLY OF LOD ρώβνας ΓΓΩΡΙΒΡς.

# Gypsum (Caso<sub>4</sub>2H<sub>2</sub>0)

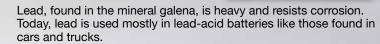
China, U.S., Iran, Spain, Canada







Lead (Pb) **Top Producers:** China, Australia, U.S., Peru



Lead can be recycled almost forever without changing its physical qualities. Most old lead-acid batteries are recycled -- more than any other consumer product.

## **△°P·bd△**Pe (Pb)

2,200 stone columns.

LY bCSDSCbUb:

υνα, αιςςς, ρρασμαρο, >?

 $d^{\omega}$ P·bddla,  $\Delta \mathcal{J}$ dblba dl $\sigma$ bb bca, L·dl dl·b $\Lambda$ ba b4 b· $\Delta$ a · $\Delta$ b  $\Gamma d \cdot b d \mathcal{J} \cdot d^{b}$ .  $\Delta d^{L}$   $b P \mathcal{J} b^{b}$ ,  $D D \cdot \nabla$   $d^{o}P \cdot b d d \mathcal{J}^{a}$   $\Delta \mathcal{J} d < C^{a}$   $b D \mathcal{J} \Delta^{a} \cdot C$ 

DD. T ND. A dre CP P. TOKINGU BP9 64 6. De . Db P. T deradroe. <ΠΔ·Δι ΔΡ 9U σσΓριι 9ρ ρ·Τ ΔιΔα·C - ΛΓ·Δα σCρια 9σαα bDSCbUPa.

# CLEANING UP!

An important part of making good ice is the ice resurfacing machine. People love watching the machine give scratched ice a shining new surface. Frank Zamboni invented the first self-propelled ice resurfacing machine in 1949, in California.



In 1967, his company started a second manufacturing plant in Brantford, Ontario. Since the creation of the first machine, more than 9,000 have been made. How does the Zamboni® ice resurfacing machine work? First, it uses a sharp steel blade to shave a thin layer from the ice. Augers collect the shavings and put them into a snow tank. It then cleans the ice surface with wash water before using a cloth towel to spread clean water over it. Along with steel parts and lead-acid batteries, the Zamboni® ice resurfacing machine is made with many metals and minerals from the Earth.

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Γα·Ο dCo bproac.bo . Ο· Οσ γασινί Γ. οι Γολρια ~ ν. ο· οι οροια  $\begin{picture}(150,0) \put(0,0){\line(1,0){$\wedge$}} \put(0,0){\line(1,0){$$ δΡΔΛ Λd·∇Λ<sup>6</sup>δ·διστ·Δι Γα·δ ∇δσ ·διλονζοριι «Sab 5L>σ ΔΛσδιλ ·Δα 1967. ΡΛΓ·ΔΡ9·ΔΦ σΕΡσ ΡΡΕΓΡΟΦΙΘΕ ΦΡΙΔΕΓσσ ΔΕ ΚΡΦΕΡΙΔΕ.  $dda^b$   $d\Lambda$   $bPD\Gamma db\sigma \cdot \Delta < \sim \sim^{o} \cdot b\Delta b^a$ .  $d\sim d\cdot d\Gamma = 9,000$   $P\Lambda D\Gamma db\sigma \cdot \Delta \cdot d^b$ . άσο C° ·αα Zamboni® Γ·bΓβου ∾ν·βΔβο ∇ιαρρί? σει ακεο L·αι Γ·bL βΡΛΟ·∇<·Ϥϸσ·Δι Γα·Ϥ C<sup>ω</sup> ΔΛϤλ·Ϥαϸσ·Δ dσΛι Ϥλ·ϤΓϸσι. Γα·Ϥ  $PYY < d \cap PL$   $PYY < \Delta \cap PL$ b<4bbΓ⁰ σΛ⁰ b<1σ√<ΡΠσbU⁰. Γ▷Δ b<1<CP٩ Λ·4Λd <<CCβ٩ Cd 64 Φσρην, ελώς Zamboni® Χροβρο Κυστρ Λοστρ βια ανστρο PDaldloga ddaa dbbab. Pbdalba



BUILDING DREAMS

Hockey is a popular activity in many Aboriginal communities. Playing

skate anytime, rain or shine. The first artificial ice rink was built in 1876

technology and design went into the Winter Olympics Speed Skating

arena in Richmond, B.C. The Richmond Oval has space for two hockey

rinks or eight tennis courts when the Speed Skating track is not in use.

the construction site, builders used 170,000 cubic metres of sand. The

building incorporates 5,600,000 kg of steel rebar and is supported by

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∇οιςος ρΔισορρου ισιατί. Τιο 2010, Δοι ρΩιασρουρα ρώρασα

ΛΙ·9<Δοσ·Δο ΡΟΛΡου<α 1876 δρρω·Δσ·Δο • ΤΟ Δομραο ααθα,

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δρσι∙σαρΔσ•σι Lσυώς. Γα•σ ρσ<ρρου•σς 5,600,000 kg Cγη</p>

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building's roof is made from trees killed by the mountain pine beetle. The

It could seat 8,000 people at the 2010 Winter Olympics. To prepare

in London, England and named the Glaciarium. In 2010, modern building

hockey on outdoor ice rinks is common, but indoor rinks let people