Model 18c

DESCRIPTIVE MODEL OF Zn-Pb SKARN DEPOSITS

By Dennis P. Cox

DESCRIPTION Sphalerite and galena in talc-silicate rocks.

GENERAL REFERENCES Einaudi and Burt (1982); Einaudi and others (1981).

GEOLOGICAL ENVIRONMENT

Rock Types Granodiorite to granite, diorite to syenite. Carbonate rocks, calcareous elastic rocks.

Textures Granitic to porphyritic; granoblastic to hornfelsic.

Age Range Mainly Mesozoic, but may be any age.

Depositional Environment Miogeoclinal sequences intruded by generally small bodies of igneous rock.

Tectonic Setting(s) Continental margin, late-erogenic magmatism.

Associated Deposit Types Copper skarn.

DEPOSIT DESCRIPTION

Mineralogy Sphalerite + galena ± pyrhotite ± pyrite ± magnetite ± chalcopyrite ± bornite ± arsenopyrite ± scheelite ± bismuthinite ± stannite ± fluorite. Gold and silver do not form minerals.

Texture/Structure Granoblastic, sulfides massive to interstitial.

Alteration Mn-hedenbergite ± andradite ± grossular ± spessartine ± bustamite ± rhodonite. Late stage Mn-actinolite ± ilvaite ± chlorite ± dannernorite ± rhodochrosite.

Ore Controls Carbonate rocks especially at shale-limestone contacts. Deposit may be hundreds of meters from intrusive.

Weathering Gossan with strong Mn oxide stains.

Geochemical Signature Zn, Pb, Mn, Cu, Co, Au, Ag, As, W, Sn, F, possibly Be. Magnetic anomalies.

EXAMPLES

Ban Ban, AUQU (Ashley, 1980)
Hanover-Fierro district, USNM (Hernon and Jones, 1968)

GRADE AND TONNAGE MODEL OF Zn-Pb SKARN DEPOSITS

By Dan L. Mosier

COMMENTS Zinc grade is correlated with lead grade (r = 0.66, n = 30) and with copper (r = 0.61, n = 17). See figs. 61-65.

DEPOSITS

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Name</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aguilar</td>
<td>AGTN</td>
<td>El Mochito</td>
<td>HNDR</td>
</tr>
<tr>
<td>Ammeberg</td>
<td>SWDN</td>
<td>Falufi</td>
<td>SWDN</td>
</tr>
<tr>
<td>Aravalpa</td>
<td>USAZ</td>
<td>Garpenberg Norra</td>
<td>SWDN</td>
</tr>
<tr>
<td>Black Hawk</td>
<td>USNM</td>
<td>Garpenberg Odal</td>
<td>SWDN</td>
</tr>
<tr>
<td>Dolores</td>
<td>MXCO</td>
<td>Groundhog</td>
<td>USNM</td>
</tr>
</tbody>
</table>
Figure 61. Tonnages of Zn-Pb skarn deposits.
Figure 62. Zinc grades of Zn-Pb skarn deposits.

Figure 63. Lead grades of Zn-Pb skarn deposits.
**Figure 64.** Silver grades of Zn-Pb skarn deposits.

**Figure 65.** Metal grades of Zn-Pb skarn deposits. A, Gold. B, Copper.