Metaheinrichite $Ba(UO_2)_2(AsO_4)_2 \cdot 8H_2O$

Crystal Data: Tetragonal. *Point Group:* 4, $4/m$, or 422. As tabular {001} crystals of square or rectangular outline, exhibiting {001}, {100}, and {110}, to 2 mm; as scaly aggregates.

Physical Properties: *Cleavage:* Perfect on {001}; distinct on {010}. *Fracture:* Irregular. Hardness = 2.5 D(meas.) = 4.04 D(calc.) = 4.09 Fluoresces bright green to greenish yellow under SW and LW UV. Radioactive.

Optical Properties: Transparent to translucent. *Color:* Yellow to green. *Streak:* Pale yellow to white. *Luster:* Vitreous to pearly.
Optical Class: Uniaxial (–), may be anomalously biaxial (–). *Pleochroism:* O = pale yellow; E = colorless. $\omega = 1.637$–1.641 $\epsilon = 1.609(1)$ 2V(meas.) = 0°–18°

Cell Data: *Space Group:* $P4_2$, $P4_2/m$, or $P4_222$. $a = 7.07$ $c = 17.74$ Z = 2

X-ray Powder Pattern: White King mine, Oregon, USA.
8.90 (vs), 3.75 (s), 5.54 (ms), 4.42 (ms), 3.55 (ms), 3.28 (ms), 4.99 (m)

Chemistry:

	(1)	(2)
UO_3	52.5	52.03
P_2O_5	2.4	
As_2O_5	15.8	20.91
CO_2	0.6	
PbO	0.9	
CaO	0.1	
BaO	13.3	13.95
H_2O	12.2	13.11
insol.	2.4	
Total	100.2	100.00

(1) White King mine, Oregon, USA; insoluble is rhyolite tuff. (2) $Ba(UO_2)_2(AsO_4)_2 \cdot 8H_2O$.

Mineral Group: Meta-autunite group.

Occurrence: A rare secondary mineral derived by the weathering of primary uranium minerals.

Association: Heinrichite, zeunerite, nováčekite, erythrite, arseniosiderite, pitticite.

Distribution: From the White King mine, about 22 km northwest of Lakeview, Lake Co., Oregon, USA. In Germany, in the Black Forest, from the Sophia mine and on the Schmiedestollen dump, near Wittichen; in the Anton mine, Heubachtal, near Schiltach; from Reinerzau and Menzenschwand; also at Sailauf, northeast of Aschaffenburg, Bavaria; in Saxony, from Schneeberg; in Rhineland-Palatinate, at Ellweiler.

Name: The prefix *meta* indicates the dehydration product of *heinrichite*.

Type Material: National Museum of Natural History, Washington, D.C., USA, 115884.

References: (1) Gross, E.B., A.S. Corey, R.S. Mitchell, and K. Walenta (1958) Heinrichite and metaheinrichite, hydrated barium uranyl arsenate minerals. Amer. Mineral., 43, 1134–1143. (2) de Abeledo, M.E.J., E.E. Galloni, and M.A.R. de Benyacar (1968) Electron diffraction data for some members of the metatorbernite group. Amer. Mineral., 53, 1028–1033.