

# Cobalt Ions Not Detectable

## Special Cooling Lubricants Offer Advantages Regarding Industrial Medicine

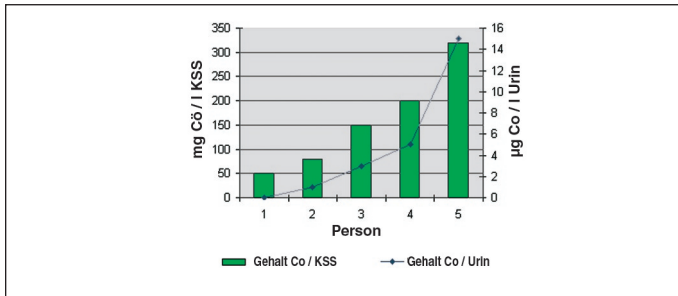


Figure 1: Dependence of the intern cobalt strain (urine values) on the cobalt concentration in the cooling lubrication solution

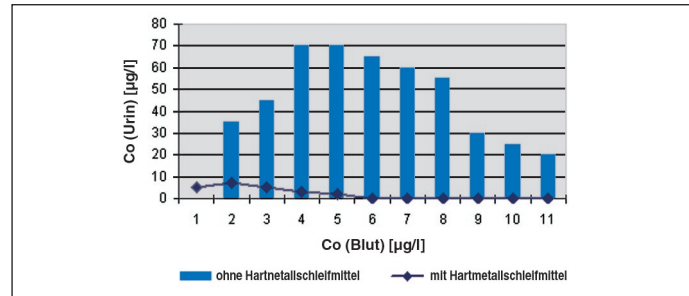


Figure 2: Concentration of cobalt ions in blood and urine of hardmetal grinders

*As systems supplier for the metal-working industry this enterprise has intensified the development and marketing of synthetic special grinding cooling lubricants free of boron and amine already for quite some time and has established itself as one of the few suppliers of „real“ special hardmetal grinding means on the market of cooling lubricants. Among others it has two synthetic cooling lubricants for the grinding of hardmetal in its program which prevent the appearance of cobalt ions in grinding solutions.*

Regarding the workplace-relevant cobalt strain in recent years several investigations concerning industrial medicine were carried out. A study proved the dependence of the cobalt concentration in the urine on the cobalt concentration in the cooling lubricant solution. High strains in the blood correlate with high concentrations in the grinding water. The comparison of wet and dry machining showed that the highest intern strain values are found at persons which exclusively were working at wet grinding places.

For quite some time Curtis Systems has two synthetic cooling lubricants for the grinding of hardmetal in its program which prevent the appearance of cobalt ions in the grinding solutions and thus also prevent their discoloration. Manifold investigations at relevant already used solutions show that at observance of the prescribed cooling lubricant concentration cobalt ions cannot be detected (Method: Merckoquant test sticks, art.Nr. 10 002).

Thus on the market for cooling lubricants Curtis Systems is one of the few suppliers of „real“ hardmetal grinding means which are known that by their use the cobalt ions concentration in the blood and urine of hardmetal grinding persons nearly normalizes. So from the view of industrial medicine an essential contribution to the elimination of a relatively strong allergen with possibly cancer-producing effect from grinding solutions could be made.

In order to keep the cobalt strains of persons working in the environment of cooling lubricants as low as possible and above all also to take complete advantage of the possibilities which are offered by the special lubricants several points have to be observed when dealing with cooling lubricants. So before a new filling of a grinding plant a thoroughly cleaning of the machine/plant is indispensable in order to eli-

minate possibly existing cobalt salts. If possible one should refrain from the use of a (system) cleanser. In most cases (hot) water will do. A „start preservation“ is recommended in that way that a preservation fluid is added to the grinding solution which shall be changed and before „letting it out“ (changing) let it circulate for about one day. Furthermore before the new filling the foaming behaviour of the mixing water from the machine/plant has to be tested (for example in a test tube or in a shaking cylinder). The foam has to decay immediately.

An „overrunning“ of so-called „easy-care“ grinding solutions which usually have a high content of cobalt should be prevented to the largest extent and only in exceptional cases carried out in small steps after tests in a laboratory. Very fine filtration is indispensable. Here band filters have proven excellently. When using magnetic grate separators, hydrocyclones or centrifuges possibly a deteriorated foam behaviour may occur. Curtis hardmetall products are free from boric acid and amines. Therefore at a longer use, should the occasion arise, it is necessary to follow-up preserve or to readjust the pH value.

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