

**KAJIAN VIABILITAS BAKTERI TANAH  
YANG TERPAPAR KROMIUM LIMBAH PENYAMAKAN KULIT  
PT LEMBAH TIDAR JAYA**

**Oleh : Rizky Putra Setyawan (134130049)**

**Di bawah bimbingan Dr. Ir. Yanisworo Wijaya Ratih, M. Si dan R. Agus  
Widodo, SP. MP**

**ABSTRAK**

Di Indonesia, kulit hewan merupakan salah satu bahan mentah yang digunakan sebagai bahan utama industri perkulitan dan karya seni. Proses penyamakan kulit biasanya menggunakan bahan mineral berupa krom. Krom termasuk logam berat yang berbahaya, dalam konsentrasi yang tinggi akan menimbulkan pencemaran dan berdampak negatif bagi bakteri tanah. Penelitian ini bertujuan untuk mengetahui pengaruh limbah industri penyamakan kulit terhadap kemampuan bertahan hidup (viabilitas) dari bakteri total, penambat N dan pelarut P tanah. Penelitian dilakukan di Laboratorium Biologi Tanah Jurusan Agroteknologi, Universitas Pembangunan Nasional “Veteran” Yogyakarta. Limbah yang digunakan berasal dari industri penyamakan kulit PT. Lembah Tidar Jaya Magelang, Jawa Tengah, sedangkan bakteri yang diujikan merupakan bakteri tanah di daerah sekitar pabrik. Penelitian dilakukan menggunakan metode rancangan acak lengkap (RAL) 2 faktor berupa dosis limbah dengan konsentrasi 0%, 25%, 50%, 75% dan 100%. Dan waktu inkubasi dilakukan selama 20 hari. Parameter yang diamati adalah sifat fisik dan kimia limbah, tanah, dan jumlah sel bakteri. Jumlah bakteri ditentukan dengan metode taburan. Pengamatan jumlah bakteri dilakukan pada inkubasi hari ke 0, 10 dan 20 terhadap jumlah bakteri total, bakteri pelarut P dan penambat N. Hasil analisis data menunjukkan bahwa pada bakteri total dan penambat N tidak terjadi interaksi antara perlakuan kadar limbah dan waktu inkubasi terhadap perubahan jumlah sel. Sampai inkubasi 20 hari terjadi penurunan jumlah sel namun secara tidak nyata. Pada bakteri pelarut fosfat terjadi interaksi antara perlakuan penambahan limbah dengan waktu inkubasi. Secara nyata paparan limbah menurunkan jumlah sel bakteri pelarut P.

Kata kunci : bakteri, limbah penyamakan kulit, viabilitas

**STUDY OF SOIL BACTERIA VIABILITY EXPOSED TO LEATHER  
TANNING WASTE CHROMIUM  
PT LEMBAH TIDAR JAYA**

**By : Rizky Putra Setyawan (134130049)**

**Supervised by :**

**Dr. Ir. Yanisworo W. R., M.Si and R. Agus Widodo SP. MP**

**ABSTRACT**

In Indonesia, livestock's leather is one of most raw material for art and leather industry. Leather tanning process usually using chrome as mineral material. Chrome could be categorized as heavy metal that dangerous, could causing contamination on its high concentration and other negative effect to soil bacteria. This research was aimed to know the effect of leather tanning industry waste on viability of soil bacteria total, nitrogen fixing bacteria, and phosphate solubility on soil. This research was conducted at Agrotechnology Department Soil Biology Laboratory of Universitas Pembangunan Nasional "Veteran" Yogyakarta. Industry waste that was used taken from PT. Lembah Tidar Jaya, Magelang, Central Java. therefore the bacteria that was tested are bacteria that was found surrounding the soil that were tested taken from the area around the factory. Method that was used are Complete Randomized Design with 2 factors, which are waste concentration 0%, 25%, 50%, 75%, and 100% and incubation periode that was done for 20 days. Parameters that were analyzed are waste's chemical and physical properties of waste, soil properties, and the number of total bacteria, N fixing bacteria and phosphate solubility bacteria. Number of bacteria were determined by spreading method. Observation to bacteria total was done on 0, 10, and 20 days of incubation. The result of data analysis showed that there's no interaction between waste dosage and incubation periode on the changing of cell number of total bacteria and N fixing bacteria. On 20 days incubation, the amount of cell was decreased non-significantly. On phosphate solubility bacteria, interaction was happened between the addition of waste and incubation periode. Significantly, the cell number of P solubility bacteria decrease because of exposed by waste.

Keywords : bacteria, leather tanning waste, viability