



# Worthwhile Operational Guidelines & Suggestions

BROILER PROCESSING TIMELY INFORMATION - AUGUST 2002

## What is BOD?

Biochemical oxygen demand (BOD) is an important wastewater parameter used in the design, treatment and regulation of wastewater discharge. BOD is defined as the amount of oxygen consumed by microbes as they digest the organic material in wastewater. This procedure requires five days to complete in the laboratory and sometimes also referred to as BOD<sub>5</sub>. Oxygen is poorly soluble in water (8 mg will dissolve in 1 liter of water), hence wastewater from a processing plant loaded with organic material can rapidly extract the dissolved oxygen in a water system, potentially altering all aquatic life. Standard strength of broiler processing plant wastewater is about 1,500 to 2,500 mg/liter BOD after the secondary screens. Typical plant pre-treatment process will reduce this to 250-300 mg/liter BOD, a standard required by most municipal treatment systems.

Blood is the single largest contributor of BOD to a processing plant wastewater. One liter (about 34 ounces or little over a quart) of blood contributes approximately 100,000 mg/liter of BOD to plant wastewater. In other words, one quart of blood in 100 gallons of water produces a BOD of 250 mg/liter. How many quarts of blood is added into your plants effluent each production shift, day, or week? What is the total effort and cost associated with removing this blood (BOD) from the plant discharge? Here are some guidelines to reduce BOD loading of your plant wastewater from blood:

- Have ample bleed-time; trap all blood going-in and coming-out of the blood tunnel or room
- Contain blood with drip pans, even in the evisceration area
- Dry clean the blood that spills on plant floor; use a shovel and squeegee
- Discourage washing blood down the drains, especially off the drip pans

Typically, blood represents about 8-10% of the live weight of poultry. No more than one-half of this volume is removed during processing. Hence, if a plant is processing 100,000 broilers with an average weight of five pounds per shift, then it will generate about 20,000 to 25,000 pounds of blood. This roughly corresponds to 3000 gallons of blood or 1,200,000,000 mg/liter of BOD that must be segregated from the plant effluent each shift. The time and effort required to reduce the BOD load in your plant wastewater is well justified, either from economical, environmental, or regulatory viewpoints.



Contact: S. F. Bilgili, Ph.D. (334) 844-2612 sbilgili@acesag.auburn.edu  
Poultry Science Department, Auburn University, Auburn, AL 36849-5416  
[www.ag.auburn.edu/dept/ph/](http://www.ag.auburn.edu/dept/ph/)