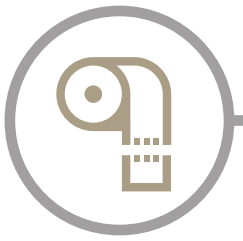
Aroma Chemistry

THE SMELL OF TOILETS & HUMAN WASTE

HUMAN WASTE COMPOSITION

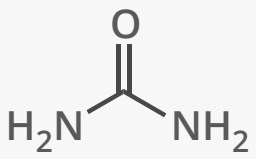


FAECES APPROXIMATE COMPOSITION

WATER: 75% SOLIDS: 25%

SOLIDS IN FAECES

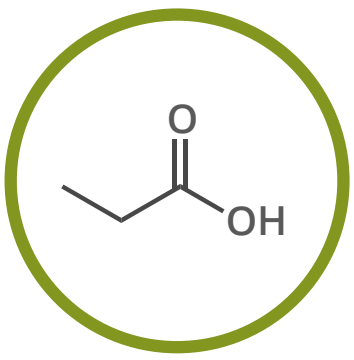
bacterial biomass (25-54%)
protein/nitrogenous matter (2-25%)
carbohydrates (25%)
undigested fat (2-15%)



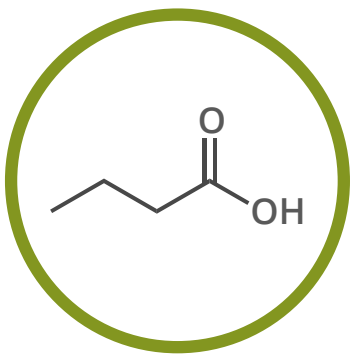
UREA

Urea is the dominant solid constituent in urine, making up over 50% of the total organic solids present.

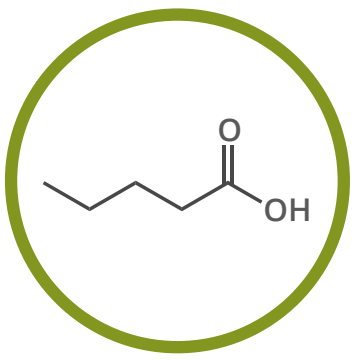
A SELECTION OF ODOUR COMPOUNDS FROM HUMAN WASTE



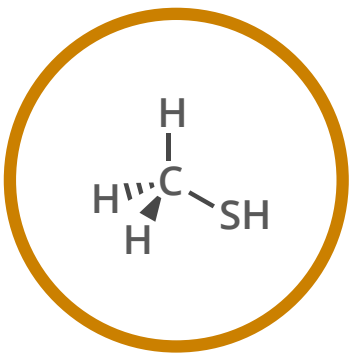
PROPANOIC ACID



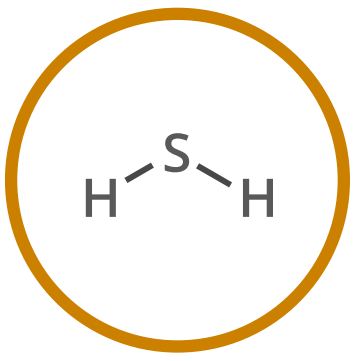
BUTANOIC ACID



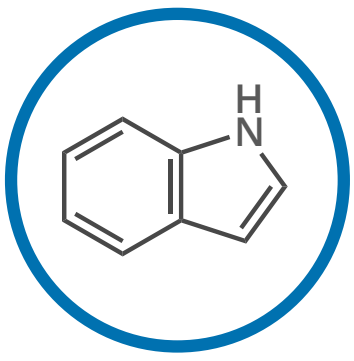
PENTANOIC ACID



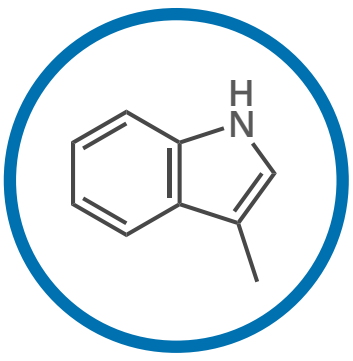
METHANETHIOL



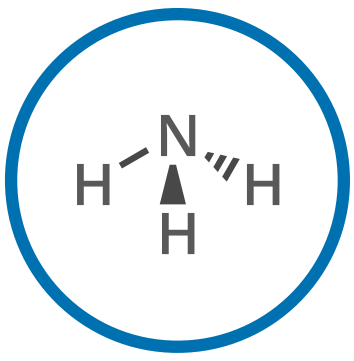
HYDROGEN SULFIDE



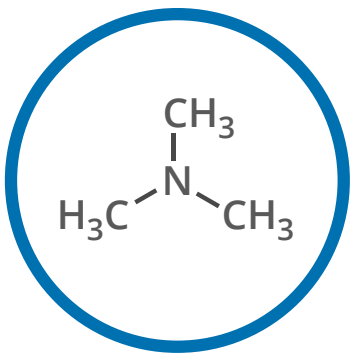
INDOLE



SKATOLE



AMMONIA



TRIMETHYLAMINE

FATTY ACIDS

Fatty acids in faeces contribute a number of unpleasant odours. The most common is ethanoic (acetic) acid, but the longer chain length acids are bigger odour contributors. Butanoic (butyric) acid is one of these, and is also in part responsible for the smell of vomit. Both it and pentanoic (valeric) acid have putrid, rancid smells in isolation.

SULFUR-CONTAINING

Sulfur-containing compounds are the main odourants of human faeces. Chief amongst these are hydrogen sulfide, the odour of which is often described as akin to rotting eggs, and methanethiol, whose odour is described as eggy and onion-like. Both have low odour thresholds, meaning even at low concentrations they have significant impact.

NITROGEN-CONTAINING

Indole and skatole are both constituents of faeces, and both have a faecal, animal odour. However, at low concentrations, their aroma is pleasant and floral, and they are found in some flowers. Ammonia and trimethylamine are produced by breakdown of urea in urine; the odour threshold for trimethylamine is much lower than that for ammonia.