

## Crude Oil Vapor Neurotoxicity Study

### Data Dictionary

<b>Field Name (Excel File)</b>	<b>Field Definition</b>
Region	Area of brain collected for assessment of neurotoxic endpoints.
Assay	Quantitative determination of the amount of a specific substance or endpoint marker in a particular sample.
Treatment	A condition applied to one or more groups that are expected to cause change in an outcome or dependent variable. In this study, the treatment groups are filtered air (AIR) and crude oil vapor (COV). The numbers 1-8 following the treatment group name are the individual animal identifiers and remains the same across all endpoint assays.
Dose	A specified quantity of a substance, agent, or therapeutic drug prescribed to be taken at one time or at stated intervals. In this study, the doses are 0 (filtered air; AIR) and 300 ppm of COV.
Regimen	The frequency or duration of administration of a specific substance, agent, or therapeutic drug. In this study, the exposure regimen was for acute and sub-chronic durations.
AIR	Filtered Air as control group
COV	Crude Oil Vapor
1 d	1-day post exposure time point
28 d	28-day post exposure time point
90 d	90-day post exposure time point
0	COV Exposure dose, 0 (Filtered air)
300 ppm	COV Exposure dose, 300 parts per million
Acute	Acute exposure, 6 hours/day for 1 day
Sub-chronic	Sub-chronic exposure, 6 hours/day for 4 days/week for 4 weeks (total of 16 exposure days).
OB	Olfactory bulb, a brain region involved in olfaction/odor processing.
STR	Striatum, a brain region associated with movement, emotion, mood etc..
MB	Midbrain, a brain region associated with movement, vision, and hearing. The substantia nigra lies within the midbrain and progressive loss of dopamine containing neurons in this region is associated with Parkinson's disease.
NE	Norepinephrine (noradrenaline) acts as both a hormone and as a neurotransmitter. In the brain, it functions as a neurotransmitter and is associated with stress response, attention, cognition, alertness, arousal, and reaction time. It is known to play a role in mood disorders (depression, anxiety).
EPI	Epinephrine (adrenaline) acts as both a hormone and as a neurotransmitter. In the brain, it functions as a neurotransmitter

	and is associated with neural signaling during stress response. Decreased epinephrine is thought to cause lightheadedness, depression, brain fog, anxiety, and sleep problems.
DA	Dopamine, a neurotransmitter that plays a role in movement, pleasure, arousal, reward, and emotions. Imbalance or deficiency can lead to loss of motor control as seen in Parkinson's disease.
5-HT	Serotonin, a neurotransmitter mainly produced in the midbrain and is associated with regulation of mood, depression, anxiety, appetite, sleep, learning, and memory.
SYP	Synaptophysin, a major brain protein involved in neurotransmitter release. Altered expression can affect neurotransmitter signaling and thereby synaptic plasticity and synaptic integrity. It is a reliable marker for axonal damage.
SYT	Synaptotagmin, a brain protein involved in neurotransmission. Essential for cognition. Altered expression is an index of synaptic dysfunction and abnormal signaling causes neurological problems.
YWHAE	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein epsilon (14-3-3-E or YWHAE), a protein involved in cellular signaling. In the brain, it is associated with movement of nerve cells and in normal brain development. Genetic alterations or deficiency is linked to neurodegeneration, as well as neuropsychiatric conditions like schizophrenia and bipolar disorders.
TH	Tyrosine hydroxylase, the rate-limiting enzyme in the synthesis of dopamine. Deficiency or loss is associated with decreased production of dopamine, which underlies decreased movement, lack of coordination, and loss of motor control.
PARK5	Ubiquitin C-Terminal Hydrolase L1 (UCHL1 or PARK5), a protein involved in the breakdown of damaged, misfolded, or unwanted proteins. In the brain, it plays a role in maintaining axonal integrity. Imbalance or dysfunction is implicated in neurodegeneration. Mutation of this gene is associated with early-onset Parkinson's disease.
PARK7	Parkinsonism Associated Deglycase (DJ1 or PARK7), a protein that plays a role in maintaining mitochondrial function by sensing and regulating reactive oxygen species and oxidative stress, thereby affording neuroprotection. Defects in this gene are the cause of an autosomal recessive early-onset Parkinson's disease.
GFAP	Glial fibrillary acidic protein, a marker of astrocyte cells in the brain. It maintains cytoskeletal dynamics, neuronal proliferation, neurite extension, and protects neurons from by forming a physical barrier. Increased expression of GFAP (astrocytic activation or astrogliosis) can be an indicator of acute or slow-evolving damage to neurons.

