Supplementary Information

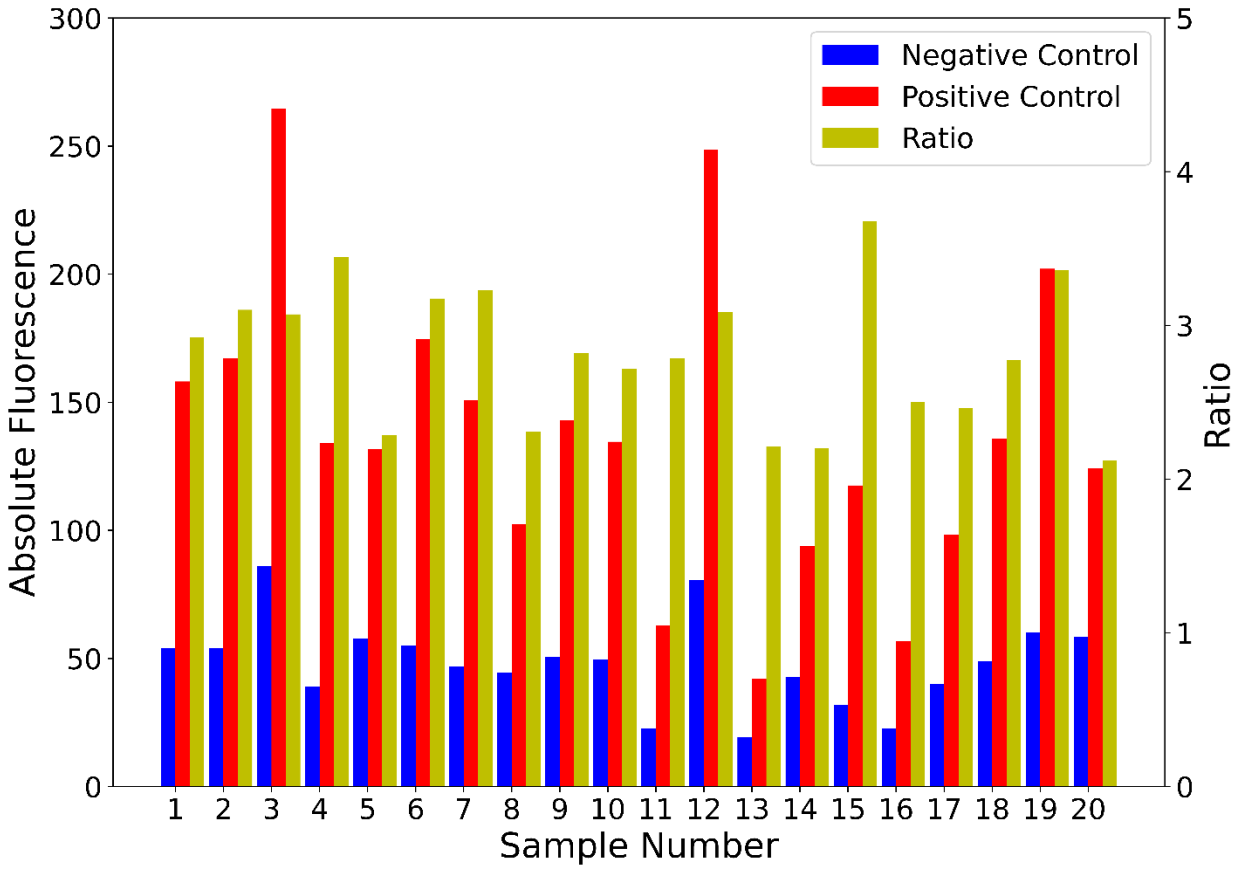

Figure S1: Absolute fluorescence of negative (DI) and positive (Zymosan's concentration= 100µg/mL) control measured manually on 20 different days

Section S1: Calculation of cellular ROS activity of the samples

For PM samples

Blank correction = z% - 117.45% (average of field blank response w.r.t to negative control) = p%

Normalization with PM mass in the reaction vial (RV) = p%/30 (µg/mL) = k%

Unit conversion of k from (µg/mL to mg/mL) = k% x 1000 = n%

Conversion of n into equivalent units of t-BOOH = ((n +4.70)/4.18) mg equivalents of t-BOOH/mg of PM

For positive controls and standard solutions:

Fluorescence of the Negative Control = x

Sample fluorescence = y

Ratio of sample fluorescence to negative control fluorescence = (x/y) *100 = z%

Blank correction = z% -100% = m%

Conversion of m into equivalent units of t-BOOH = ((m +4.70)/4.18) mg/mL of t-BOOH (from the calibration curve)

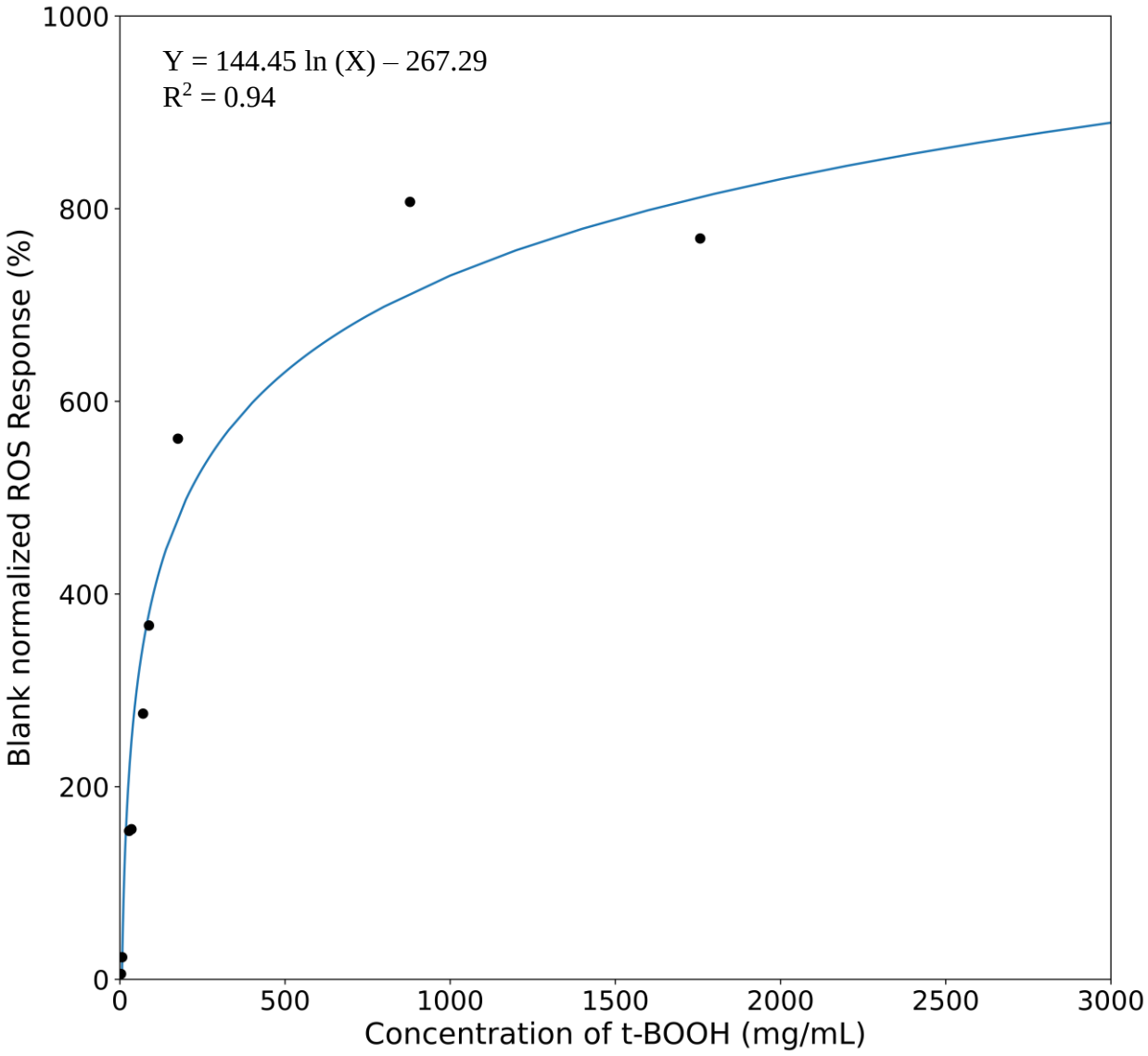

Figure S2: Calibration curve for t-BOOH (concentrations used = 3.51 -1756.78 mg/ml)

Table S1: Detail of the filter samples (dates of collection, filter mass loading) used for assessing for accuracy and precision of the instrument

Sampling Site	Sampling Date (Start-End Date)	Filter Mass Loading (mg)
Bondville	6/12/2018 -6/15/2018	45.8
	09/04/2018-09/07/2018	34.8
	12/11/2018-12/14/2018	65.1
	12/18/2018-12/21/2018	60.2
	03/19/2019-03/22/2019	58.9
	05/14/2019-05/17/2019	47.2
	05/21/2019-05/24/2019	34.5
Chicago	05/22/2018-05/25/2018	41
	05/29/2018-06/01/2018	54
	06/5/2018-06/08/2018	48.8
	06/12/2018 -06/15/2018	45.8
	06/26/2018-06/29/2018	58.7
	07/10/2018-07/13/2018	56.3
	10/9/2018-10/12/2018	32
	10/16/2018-10/19/2018	60.7
	10/23/2018-10/26/2018	42.4
	02/05/2019-02/08/2019	46.4
Champaign	05/22/2018-05/25/2018	75.3
	05/29/2018-06/01/2018	50.6
	07/03/2018-07/06/2018	39.8
	07/10/2018-07/13/2018	64.4
	07/24/2018-07/27/2018	62.9
	07/31/2018-08/03/2018	56.5
	08/07/2018-08/10/2018	63.3
	08/21/2018-08/24/2018	75.3
	08/28/2018-08/31/2018	35.4
	09/04/2018-09/07/2018	69.3
	10/09/2018-10/12/2018	24.7
	10/23/2018-10/26/2018	45.7
	04/23/2019-04/26/2019	69.8
	05/28/2019-05/31/2019	38.7
Indianapolis	6/19/2018-06/22/2018	43
	6/26/2018-06/29/2018	33.1
	8/7/2018-08/11/2018	33
	8/28/2018-08/31/2018	47.6
	10/23/2018-10/26/2018	50.1

	1/15/2019-1/18/2019	56.8
	1/22/2019-1/25/2019	53.5
	5/21/2019-5/24/2019	45.6
	5/22/2019-5/25/2019	62.7
St Louis	6/19/2018-6/22/2018	58.1
	6/26/2018-6/29/2018	50.9
	7/31/2018-08/03/2018	70.4
	8/28/2018-8/31/2018	44.8
	10/23/2018-10/26/2018	64.4
	10/30/2018-11/02/2018*	39.3
	1/15/2019-1/18/2019	60.2
	2/05/2019-2/08/2019	46.4
	4/2/2019-4/5/2019	74
	4/23/2019-4/26/2019	45

*PM Sample used for precision.