Supplementary file S1: Detailed descriptions of Green analytical procedure index GAPI parameters for analytical methods for HNBB analysis.

	Category*	Figure
1	Method [16]	
	Sample preparation	
	1. Offline (Red)	
	2. None (Green)	
	3. Required (Yellow)	
	4. None (Green)	
	5 Simple procedure	
	(vellow)	
	6 Micro extraction	
	(vallow)	
	(yellow)	
	7. Non-green solvents	
	and reagents used	· · ·
	(Red)	
	8. None (Green)	
	<b><u>Reagent and Solvents</u></b>	
	9. 10-100 mL (yellow)	
	10. NFPA=2, Moderate	
	toxicity (Yellow)	
	11. NFPA=3; high	
	flammability (Yellow)	
	Instrumentation	
	12. $\leq 1.5$ Kwh per	
	sample (yellow)	
	13. Emission of	
	vapors to atmosphere	
	(red)	
	14 > 10  mJ (Red)	
	15 Recycling	
	nossible (Green)	
	possible (Green)	
2		
2	Mothod [17]	
	Sample preparation	
	1 Offling (Ped)	
	1. Onnie (Ked)	
	2. None (Green)	
	3. Kequired (Yellow)	
	4. Samples must be	
	iced (yellow)	
	5. Solid-phase	
	extraction (red)	
	6. Nano-extraction	
	(green)	
	7. Non-green	· · · · · · · · · · · · · · · · · · ·
	solvents and reagents	
	used	
	(Red)	

	8. Simple treatment	
	(yellow)	
	<b>Reagent and Solvents</b>	
	9. 10-100 mL	
	(vellow)	
	10 NFPA=2	
	Moderate toxicity	
	(Vellow)	
	(1  cnow) 11 NEDA-3: high	
	flormability (Valley)	
	Inanimability (Tellow)	
	<u>Instrumentation</u>	
	$12. \ge 1.3$ Kwii per	
	sample (yellow)	
	13. Emission of	
	vapors to atmosphere	
	(red)	
	14. 1- 10 mL (yellow)	
	15. No treatment	
	(Red)	
3	Method [18]	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Samples must be	
	refrigerated	
	(vellow)	
	5. Indirect (red)	
	6 Micro-extraction	
	(vellow)	
	7 Non-green	
	7. Non-green	
	solvents and	• •
	(red)	
	(led)	
	8. None (green)	
	<u>Reagent and Solvents</u>	
	9. $10-100 \text{ mL}$	
	(yellow)	
	10. NFPA=2,	
	Moderate toxicity	
	(yellow)	
	11. NFPA=3; high	
	flammability	
	(yellow)	
	<b>Instrumentation</b>	
	$12. \leq 1.5$ Kwh /sample	
	(yellow)	
	13. Vapors emission	
	(red)	
	14. 10 mL ( red) $>$	

	15. Recycling	
	possible (Green)	
4	Method[19]	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Samples must be	
	refrigerated	
	(yellow)	
	5. Simple procedure	
	(yellow)	
	6. Micro-extraction	
	(yellow)	
	7. Non-green	• •
	solvents and	
	reagents used	
	(red)	
	8. None (green)	
	<b>Reagent and Solvents</b>	
	9. 10-100 mL	
	(yellow)	
	10. NFPA=2,	
	Moderate toxicity	
	(yellow)	
	11. NFPA=3; high	
	flammability	
	(yellow)	
	<b>Instrumentation</b>	
	12. ≤1.5 Kwh /	
	sample (yellow)	
	13. Vapors emission	
	(red)	
	14. > 10  mL  (red)	
	15. Recycling	
	possible (Green)	
5	Method[20]	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Samples must be	
	refrigerated	
	(yellow)	
	5. Simple procedure	
	(yellow)	
	6. Micro-extraction	
	(yellow)	
	7. Non-green	$\bullet$ $\bullet$
	solvents and	

	reagents used	
	(red)	
	8. None (green)	
	<b>Reagent and Solvents</b>	
	9. 10-100 mL	
	(yellow)	
	10. NFPA=2,	
	Moderate toxicity	
	(yellow)	
	11. NFPA=3; high	
	flammability	
	(yellow)	
	<b>Instrumentation</b>	
	12. ≤1.5 Kwh /	
	sample (yellow)	
	13. Vapors emission	
	(red)	
	14. $1-10$ mL (vellow)	
	15. Recycling	
	possible (Green)	
6	Method[21]	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Samples must be	
	refrigerated	
	(vellow)	
	5. Simple procedure	
	(vellow)	
	6. Micro-extraction	
	(vellow)	
	7. Non-green	• •
	solvents and	
	reagents used	
	(red)	
	8 None (green)	
	Reagent and Solvents	
	9. 10-100 mL	
	(vellow)	
	10  NFPA=2	
	Moderate toxicity	
	(vellow)	
	11. NFPA=3. high	
	flammability	
	(vellow)	
	Instrumentation	
	$\frac{11301}{12} < 15 K wh /$	
	$12. \ge 1.3 \text{ Kwil} / $	
	sample (yenow)	

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	13. Vapors emission	
	(red)	
	14. >10 mL ( red)	
	15. Recycling	
	possible (Green)	
7	Method [22]	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Samples must be	
	refrigerated	
	(yellow)	
	5. Simple procedure	
	(yellow)	
	6. Micro-extraction	
	(yellow)	
	7. Non-green	•
	solvents and	
	reagents used	
	(red)	
	8. None (green)	
	<b>Reagent and Solvents</b>	
	9. 10-100 mL	
	(yellow)	
	10. NFPA=2,	
	Moderate toxicity	
	(yellow)	
	11. NFPA=3; high	
	flammability	
	(yellow)	
	<b>Instrumentation</b>	
	12. ≤1.5 Kwh /	
	sample (yellow)	
	13. Vapors emission	
	(red)	
	14. 1- 10 mL (yellow)	
	15. Recycling	
	possible (Green)	

8	Method[23]	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Samples must be	
	refrigerated	
	(vellow)	
	5. Simple procedure	
	(vellow)	
	6 Micro-extraction	
	(vellow)	
	7 Non-green	• •
	solvents and	
	reagents used	
	(red)	
	8 None (green)	
	Reagent and Solvents	
	9 10-100 mL	
	(vellow)	
	10  NFPA=2	
	Moderate toxicity	
	(vellow)	
	$11 \text{ NFPA} = 3 \cdot \text{high}$	
	flammability	
	(vellow)	
	Instrumentation	
	12 < 15 Kwh per	
	sample (vellow)	
	13. Vapors emission	
	(red)	
	14. 1-10 mL (vellow)	
	15. Recycling	
	possible (Green)	
9	Method[24]	
-	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Samples must be	
	refrigerated	
	(yellow)	
	5. Simple procedure	
	(yellow)	
	6. Micro-extraction	
	(vellow)	
	7. Non-green	
	solvents and	•
	reagents used	
	(red)	

	8. None (green)	
	<b>Reagent and Solvents</b>	
	9. 10-100 mL	
	(yellow)	
	10. NFPA=2,	
	Moderate toxicity	
	(vellow)	
	11. NFPA=3: high	
	flammability	
	(vellow)	
	Instrumentation	
	12. <1.5 Kwh /	
	sample (vellow)	
	13 Vapors emission	
	(red)	
	$14 \ 1 - 10 \text{ mL} \text{ (vellow)}$	
	15 Recycling	
	nossible (Green)	
10	Method [25]	
10	Sample preparation	
	1 Offline (Red)	
	2 None (green)	
	3 Required (vellow)	
	4 Samples must be	
	refrigerated	
	(vellow)	
	5 Simple procedure	
	(vellow)	
	6 Nano-extraction	
	(green)	
	7 Non-green	•
	solvents and	
	reagents used	
	(red)	
	8 None (green)	
	Reagent and Solvents	
	9. 10-100 mL	
	(vellow)	
	10. NFPA=2.	
	Moderate toxicity	
	(vellow)	
	11. NFPA=3: high	
	flammability	
	(vellow)	
	Instrumentation	
	12. >1.5 Kwh /sample	
	(Red)	
	13. Emission of	
	vapors to	
	atmosphere (red)	

	14. < <sup>\</sup> mL (green) 15. Recycling possible (Green)	
11	Method [26] <u>Sample p</u> reparation	
	1. Offline (Red)	
	2. None (yellow)	
	3. Required (yellow)	
	4. Under normal	
	conditions	
	(yellow) 5 Complicated	
	sample collection	
	(red)	
	6. Nano-extraction	
	(green)	• •
	7. Non-green	
	solvents and	
	reagents used	
	(red)	
	8. None (green)	
	<u>Reagent and Solvents</u> 9 10-100 mJ	
	(vellow)	
	10.  NFPA=2.	
	Moderate toxicity	
	(yellow)	
	11. NFPA=3; high	
	flammability	
	(yellow)	
	<u>Instrumentation</u> 12 >1.5 Km <sup>h</sup> /	
	$\frac{12.21.3 \text{ Wil}}{\text{sample (Ped)}}$	
	13. Vanors emission	
	(red)	
	14. < ML (green)	

	15. No treatment	
	(Red)	
12	Method [27] Aqueous	
	method	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Under normal	
	conditions	
	(yellow)	
	5. simple sample	
	collection	
	(yellow)	
	6. micro-extraction	
	(yellow)	
	7. Green solvent	• •
	(yellow)	
	8. None (green)	
	<b>Reagent and Solvents</b>	
	9. >10 mL (green)	
	10. NFPA health	
	hazard=1 (green)	
	11. NFPA	
	flammability	
	score=0 (green)	
	12. >1.5 Kwh /	
	sample (Red)	
	Instrumentation	
	13. Hermetic sealing	
	of analytical	
	process (green)	
	14. mL (green) $< 1$	
	15. Recycling	
	possible (green)	
	Non-aqueous method[27]	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Under normal	
	conditions	
	(yellow)	
	5. simple sample	
	collection	
	(yellow)	
	6. Micro-extraction	
	(yellow)	
	7. Non-green	
	solvents and	

	reagents used	
	(red)	
	8. None (green)	
	<b>Reagent and Solvents</b>	
	9. >10 mL (green)	
	10. NFPA=2.	
	Moderate toxicity	
	(vellow)	
	11. NFPA=3. high	
	flammability	
	(vellow)	
	(yenow) Instrumentation	
	11500000000000000000000000000000000000	
	$12. \leq 1.3 \text{ Will}/$	
	sample (Red)	
	13. Hermetic sealing	
	of analytical	
	process (green)	
	14. < ML (green)	
	15. Recycling is	
	possible (green)	
13	Method [28]Non-aqueous	
	method	
	Sample preparation	
	1. Offline (Red)	
	2 None (green)	
	2. Required (vallow)	
	J. Linder normal	
	4. Under normal	
	(yellow)	
	5. simple sample	
	collection	
	(yellow)	• V
	6. Micro-extraction	
	(yellow)	
	7. Non-green	
	solvents and	
	reagents used	
	(red)	
	8. None (green)	
	<b>Reagent and Solvents</b>	
	9. >10 mL (green)	
	10. NFPA=2	
	Moderate toxicity	
	(vellow)	
	$11 \text{ NFDA} = 3 \cdot \text{ high}$	
	flommobility	
	(yellow)	
	<u>Instrumentation</u>	
	12. ≥1.5 Kwh per	
	sample (Red)	

		13. Hermetic sealing	
		of analytical	
		process (green)	
		14. < ML (green)	
		15. Recycling is	
		possible (green)	
	14	Method [29]	
		Sample preparation	
		1. Offline (Red)	
		2. None (green)	
		3. Required (yellow)	
		4. Samples must be	
		refrigerated	
		(yellow)	
		5. Simple procedure	
		(yellow)	
		6. Micro-extraction	
		(yellow)	• •
		7. Non-green	
		solvents and	
		reagents used	
		(red)	
		8. None (green)	
		<b>Reagent and Solvents</b>	
		9. 10-100 mL	
		(yellow)	
		10. NFPA=2,	
		Moderate toxicity	
		(yellow)	
		11. NFPA=3; high	
		flammability	
		(yellow)	
		<u>Instrumentation</u>	
		$12. \le 1.5 \text{ Kwh}/$	
ļ		sample (yellow)	
		13. Vapors emission	
ļ		(red)	
ļ		14. 1 - 10 mL (	
ļ		yellow)	
ļ		15. Recycling	
		possible (Green)	

15	Method [30]	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Samples must be	
	refrigerated	
	(vellow)	
	5. Simple procedure	
	(vellow)	
	6. Micro-extraction	
	(vellow)	• •
	7 Non-green	
	solvents and	
	reagents used	
	(red)	
	8 None (green)	
	Reagent and Solvents	
	9 10-100 mI	
	(vellow)	
	10  NFPA=2	
	Moderate toxicity	
	(vellow)	
	11 NFPA=3: high	
	flammability	
	(vellow)	
	Instrumentation	
	12. < 1.5  Kwh/	
	sample (vellow)	
	13. Vapors emission	
	(red)	
	14. > 10  mL  (red)	
	15. Recycling	
	possible (Green)	
16	Method [31]	
	Sample preparation	
	1. Offline (Red)	
	2. None (green)	
	3. Required (yellow)	
	4. Samples must be	
	refrigerated	
	(yellow)	
	5. Simple procedure	
	(yellow)	
	6. Micro-extraction	
	(yellow)	$\checkmark$
	7. Non-green	
	solvents and	
	reagents used	
	(red)	

8. None (green)	
<b>Reagent and Solvents</b>	
9. 10-100 mL	
(yellow)	
10. NFPA=2,	
Moderate toxicity	
(yellow)	
11. NFPA=3; high	
flammability	
(yellow)	
<b>Instrumentation</b>	
$12. \geq 1.5$ Kwh /sample	
(Red)	
13. Vapors emission	
(red)	
14. 1- 10 mL (yellow)	
15. Recycling	
possible (Green)	

\*1-Collection, 2-Preservation, 3-Transport, 4-Storage, 5-Type of method: Direct or indirect, 6-Scale of extraction, 7-Solvents/ reagents used, 8-Additional treatments, 9-Amount, 10-Health hazard, 11-Safety hazard, 12-Energy, 13-Occupational hazard, 14-Waste, 15-Waste treatment