Turbidity :

#include <LiquidCrystal.h>  // Include the standard LiquidCrystal library

#define turbiditySensorPin A0  // Turbidity sensor connected to analog pin A0

// Define turbidity threshold (you may need to calibrate this value)

#define turbidityThreshold 45  // This is the threshold for dirty water (adjust this as needed)

// Initialize the LCD (pin 12, 11, 5, 4, 3, 2 for RS, E, D4, D5, D6, D7)

LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

void setup() {

  // Initialize serial communication for debugging

  Serial.begin(9600);

  // Initialize LCD

  lcd.begin(16, 2);  // Set up the LCD's number of columns and rows

  lcd.print("Water Quality");

  delay(2000);

  lcd.clear();

}

void loop() {

  // Read the turbidity sensor value (0-1023)

  int sensorValue = analogRead(turbiditySensorPin);

  int turbidityValue = map(sensorValue, 0, 640, 100, 0);

  // Print the turbidity value to the Serial Monitor for debugging

  Serial.print("Turbidity: ");

  Serial.println(turbidityValue);

  // If the turbidity value is greater than the threshold, display water is dirty

  if (turbidityValue > turbidityThreshold) {

    Serial.println("Turbidity too high! Water is dirty.");

    // Update LCD to show the water is dirty

    lcd.clear();

    lcd.setCursor(0, 0);

    lcd.print("Water is Dirty");

    lcd.setCursor(0, 1);

    lcd.print("Expel the water");

  } else {

    // If the turbidity is below the threshold, display water is clean

    lcd.clear();

    lcd.setCursor(0, 0);

    lcd.print("Water is Clean");

    lcd.setCursor(0, 1);

    lcd.print("No Action Needed");

  }

  // Wait for a moment before checking turbidity again

  delay(2000);  // Check every 2 seconds (adjust as needed)

}