

# Guidance on the Legal Definition of Contaminated Land

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# Applying the definition of “contaminated land” under Part 2A of the Environmental Protection Act

## Introduction

1. Part 2A of the Environmental Protection Act 1990 came into force in England in 2000. Its main aim is to help address the problem of historical contamination of land and the risks it can pose to people’s health and the environment. It requires that local authorities identify *contaminated land* and ensure that significant risks are dealt with.
2. The Government sees a central aim of the Part 2A regime as being to encourage voluntary remediation of land affected by contamination (without Part 2A actually being used to require it). For instance, voluntary remediation often takes place as land is redeveloped, or because land owners want to increase the utility and value of their land. Normally, Part 2A would only be used to require remediation if no better solution were available.
3. This non-statutory guidance discusses Part 2A’s definition of the term *contaminated land*. The term is defined according to whether contamination poses a significant level of risk, and local authorities are given considerable discretion to decide whether such risks exist having studied the details of each specific case.
4. The definition establishes when land is *contaminated*, and therefore how stringent remediation must be to stop it qualifying as *contaminated*. In the latter regard there is a link to the planning system, under which if land affected by contamination is being developed it must (as a minimum) be remediated to a level where it cannot qualify as *contaminated land* under Part 2A. The definition helps decide the level of protection afforded to people’s health and the environment. It also has other implications because remediation is often expensive, and it can have a range of socio-economic and environmental impacts.
5. Since Part 2A came into force, there has been uncertainty over how the definition should be interpreted, particularly the Part 2A test whereby land is *contaminated* if it poses a *significant possibility of significant harm* (SPOSH). There are two main areas of uncertainty. (1) In the absence of a precise legal definition, what constitutes SPOSH and what does not? And (2) how should decisions be taken in cases where it is not scientifically possible to estimate risks accurately?
6. This guidance is aimed primarily at local authorities in England. It is not legally binding, but it gives Defra’s view on how local authorities should go about deciding what is SPOSH under Part 2A. It does not remove the uncertainty – there are no easy answers in an area which is unavoidably complex. But it does seek to explain why the uncertainty exists, and how in Defra’s view authorities should proceed. The paper looks at:
  - (i) How the Part 2A regime defines *contaminated land*.
  - (ii) Why Part 2A takes the approach it does.
  - (iii) The role of technical guidance.
  - (iv) Legal considerations for local authorities.

7. The paper has been produced by the Department for Environment, Food and Rural Affairs (Defra) in consultation with the Department for Communities and Local Government (CLG); the Devolved Administrations for Scotland, Wales and Northern Ireland; the Environment Agency; the Health Protection Agency; the Food Standards Agency; LACORS (the Local Authorities Coordinators of Regulatory Services); English Partnerships; and the Planning Officers Society.

## Part 2A and the planning system

8. As mentioned above, where possible, the Government's policy is that land contamination should be dealt with "voluntarily". Local authorities often use the planning system, rather than Part 2A, to encourage remediation of land affected by contamination. The idea is that:
  - (i) Remediation will often be funded by redevelopment, and the planning system can and should secure appropriate investigation and remediation of land.
  - (ii) Part 2A measures should be held in reserve for use where there is no suitable voluntary solution. For instance, this might be the case where development has already taken place in the past without SPOSH being dealt with; or where there is no realistic prospect of voluntary remediation in the near future; or where the risks are too great to wait for redevelopment.
9. *Planning Policy Statement 23: Planning and Pollution Control* (PPS 23)<sup>1</sup> explains the relationship between the two regimes. In brief, as a minimum, after carrying out a development and commencement of its use, the land should not be capable of being determined as contaminated land under Part 2A. The advice on Part 2A below may be useful to planners, but it needs to be read in conjunction with PPS 23.

## How does Part 2A define "contaminated land"?

10. Section 78A(2) of Part 2A of the Environmental Protection Act 1990<sup>2</sup> defines "*contaminated land*" as "*any land which appears to the local authority in whose area the land is situated to be in such a condition, by reason of substances in, on or under the land, that (a) significant harm is being caused or there is a significant possibility of such harm being caused; or (b) pollution of controlled waters is being, or is likely to be, caused*"<sup>3</sup>.
11. "Harm" is defined as *harm to the health of living organisms or other interference with the ecological systems of which they form part, and in the case of man, includes harm to his property.*

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<sup>1</sup> PPS 23 can be found at <http://www.communities.gov.uk/planningandbuilding/planning/planningpolicyguidance/planningpolicystatements/planningpolicystatements/pps23/>

<sup>2</sup> "Part 2A" was inserted into the 1990 Act by Section 57 of the Environment Act 1995.

<sup>3</sup> The Part 2A definition of contaminated land was extended in 2006 to include radioactively contaminated land. We are not dealing with such land in this paper, so we have not mentioned it in the main text above. In due course, the Part 2A definition (as it applies to pollution of controlled waters under Section 78A(2)(b)) will be amended to apply to "significant pollution" of controlled waters (rather than "pollution" of controlled waters, as is currently the case), commencing Section 86 of the Water Act 2003.

12. The Act does not explain what it means by *significant* in the terms *significant harm* and *significant possibility of significant harm*. But it provides for “statutory guidance” (i.e. guidance with statutory force which forms part of the Part 2A regime) to elaborate, and requires local authorities to make decisions on *significance* in accordance with the statutory guidance.
13. The statutory guidance<sup>4</sup> explains broadly what is meant by *significant harm*. It also goes some way towards explaining the basis on which local authorities should decide whether there is a **significant possibility of significant harm**, whilst leaving them with considerable discretion. For instance:
  - (i) It explains that *significant harm*<sup>5</sup> to human health includes death, disease, serious injury, genetic mutation, birth defects or impairment of reproductive functions. In this context disease means an unhealthy condition of the body or a part of it and can include, for example, cancer, liver dysfunction or extensive skin ailments.
  - (ii) It explains that SPOSH<sup>6</sup>, in relation to toxic effects on human health, would exist if the amount of the pollutant to which a person might be exposed would represent an “unacceptable” intake or “unacceptable” direct bodily contact, assessed on the basis of relevant information on the toxicological properties of that pollutant. The concept of “unacceptable” relates directly to SPOSH – i.e. an **unacceptable** intake of contaminants is an intake which would result in a **significant possibility of significant harm**<sup>7</sup>. The statutory guidance does not explain what *significant/unacceptable* means. (This point is picked up in paragraph 21 below).
  - (iii) There is similar guidance on what would constitute *significant harm* or SPOSH in relation to property, the environment and non-toxic affects on humans.
14. The Act introduces the concept of SPOSH, and local authorities are required by the legislation to have regard to the statutory guidance when determining whether land poses a SPOSH. This non-statutory guidance is intended to address any uncertainty to which the legislation and statutory guidance have given rise.

## Why does Part 2A take this approach?

15. Defining “contaminated land” in law is not straightforward. The complexities raised by land contamination mean that any definition would inevitably be problematic.
16. There are three main ways in which the term *contaminated land* could be defined. It could be done according to (1) whether contaminants are present in soil at *any* level; or (2) whether contaminants are present in soil above a given concentration; or (3) whether contamination poses a certain level of risk.

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<sup>4</sup> The “statutory guidance” for Part 2A was issued in 2000 and revised in 2006. The current version of the guidance can be found in Annex 3 of Defra Circular 01/2006 at <http://defraweb/environment/land/contaminated/pdf/circular01-2006.pdf>

<sup>5</sup> Categories of significant harm are set out in Table A of the statutory guidance (page 86 of Defra Circular 01/2006)

<sup>6</sup> Conditions for there being a significant possibility of significant harm are set out in Table B of the statutory guidance (page 88 of Defra Circular 01/2006)

<sup>7</sup> The level of risk on a given site will either be unacceptable/SPOSH or it will be acceptable/ non-SPOSH.

17. The aim of the definition is to focus Part 2A only on problematic land, and to avoid inadvertently catching non-problematic land. This ruled out the first two options because:
- (i) Low levels of contaminants (natural or anthropogenic) are present in most soil in England. In the vast majority of cases there is no appreciable risk, and a definition based on the mere presence of contaminants would cause large swathes of England to be caught unnecessarily.
  - (ii) Concentrations of contaminants (looked at in isolation from other factors which control risks) are not a good indicator of risk. A given concentration may pose a markedly different level of risk depending on where it is, who or what may be affected, and for how long. So it would be impossible to set proportionate *concentration thresholds*. To catch the risks that Part 2A sets out to catch, such thresholds would have to be set so low that a great deal of land would be caught unnecessarily.
18. Thus the law takes a risk-based approach because it is the only way in which it can, at least in principle, target land where there is SPOSH, whilst avoiding the disproportionate effects of catching land where there is no SPOSH. It also helps focus remediation on reducing risks, rather than the removal of contaminants from soil irrespective of risk (which would in some cases be unsustainable and unnecessary)<sup>8</sup>.
19. However, the risk-based approach poses two significant challenges. (1) It is often difficult to estimate risks posed by land contamination accurately. And (2) having estimated risks, how does an assessor decide whether risks are sufficiently high to be caught by the law?
20. The first challenge raised by the risk-based approach is that it can be inherently difficult to estimate and evaluate risks posed by land contamination. For instance:
- (i) There are thousands of potential contaminants which might be present on various sites around England (although a smaller sub-set probably drives the risk on most sites).
  - (ii) The level of scientific knowledge on the health and environmental effects of contaminants is variable. For a few, there is relatively good scientific knowledge but for many others information about their effects is lacking. Even when there are good data on the effects of a contaminant it can be difficult to decide, particularly on a generic basis, whether a given exposure to a contaminant is likely to cause harm to a receptor or the degree of harm which is likely to be caused. Thus there can be large degrees of uncertainty around this key factor of risk assessment.
  - (iii) The state of scientific knowledge (in the UK and internationally) is evolving, but the scale and nature of the issues raised means that for the purpose of making determinations under Part 2A the situation will not change to any large degree in the foreseeable future.

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<sup>8</sup> Remediation under Part 2A involves breaking the pollutant-pathway-receptor linkages which create significant risks. Often this involves removing contaminants from a site. But sometimes it might be appropriate (1) to break the "pathway" (i.e. block the means by which contaminants may get to a receptor); or (2) to change the "receptor" part of the linkage (e.g. by changing to a less sensitive land use; restricting access to land; or making people aware of the risk and how to avoid it). In the latter two cases, there would not necessarily be a change in contamination levels in soil.

- (iv) Risks usually depend on many factors controlling how likely it is that a receptor may actually be exposed to harmful quantities of contaminant (e.g. what is the site used for?...is the land residential, industrial, offices, agricultural etc?...who is likely to be exposed?...for how long might they be exposed?...and so on). Many of these factors are site-specific, and most can only be estimated or assumed with reasonable foresight. Depending on the approach and assumptions used to estimate likely exposure, the results can be markedly different.
  - (v) There can be practical difficulties. For instance, it can be difficult for local authorities to recruit officers with sufficient expertise to conduct risk assessments confidently. It can also be difficult to retain such officers, given that once they gain experience they can become attractive to other authorities and private sector companies. Also, phased site investigations and the risk assessment process can be expensive and time consuming.
21. The second challenge raised by the risk-based approach is how to distinguish SPOSH from non-SPOSH. Scientific risk assessment allows assessors to get the best practical understanding of the *possibility of significant harm* on a site. But science alone cannot answer the question of whether or not a given *possibility of significant harm* is *significant*. The question of what is significant is a matter of policy judgement based firmly on scientific risk assessment taking account of all relevant and available evidence.
22. There are two main ways in which Part 2A could have approached the policy issue of deciding when there is a **significant possibility of significant harm**:
- (i) Law makers could have prescribed number-based thresholds in Part 2A or the statutory guidance. This would have established a clear threshold for what Government and Parliament considered to be a significant *possibility of significant harm*. However, the complexity of assessing risks posed by land contamination meant this was not feasible. (See **Annex A**).
  - (ii) Or law makers could leave such judgements to be taken case-by-case by a suitable regulator. The law would establish broad parameters in which decisions must be taken, and the regulator would make the policy decision on *significance* according to the details of each case.<sup>9</sup>
23. In the absence of a practicable number-based threshold option (and in recognition of the site-specific nature of risks), Part 2A takes an approach where decisions on whether risks constitute SPOSH must be taken on a case-by-case basis by local authorities. In essence, a local authority must do this:
- (i) By conducting a science-based risk assessment which takes account of toxicological information, and site-specific and local circumstances.

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<sup>9</sup> This type of approach is taken in various laws that deal with issues with many case-specific variables. For example, environmental impact assessment (EIA) Regulations under the town and country planning system require local planning authorities to decide whether certain types of development projects are likely to have *significant effects on the environment*. The legislation does not define ‘significance’, and local authorities are required to consider the effects of projects on a case by case basis.

- (ii) By making a judgement on whether in the view of the local authority there is a SPOSH. The judgement should be firmly based on the science-based risk assessment. It should also take due account of the purpose of Part 2A.<sup>10</sup>
24. The purpose of this approach is that local authorities can use their judgement and expert local knowledge to reach reasonable decisions in the face of complex issues and potentially large degrees of scientific uncertainty. The broad aim is to strike a reasonable balance between protecting people's health and the environment, whilst ensuring that unnecessary socio-economic and environmental burdens are kept to a minimum.

### Technical guidance

25. The statutory guidance on Part 2A ties the determination of SPOSH to scientifically based risk assessment, and says that local authorities should make use of technical guidance and materials. For instance, it says that local authorities should carry out risk assessments according to relevant, appropriate, authoritative and scientifically based guidance. This technical guidance informs any subsequent decision on SPOSH (but it is not the only consideration).
26. The statutory guidance does not specify what such (non-statutory) technical guidance might be, or who should produce it. There is Government-backed technical guidance (described below), which meets the requirements of being authoritative etc. But local authorities are free to use alternative guidance provided they are satisfied it meets the requirements of the statutory guidance.
27. Local authorities can also seek the advice of government agencies when dealing with specific cases, such as the Health Protection Agency and the Food Standards Agency (in relation to health and food issues), the Environment Agency (in relation to water pollution) and Natural England (in relation to ecology).

### CLEA guidance on health risks

28. In 2002, the Environment Agency and Defra issued non-statutory technical guidance known as the Contaminated Land Exposure Assessment ("CLEA") framework. The CLEA guidance is non-statutory, thus it has no formal legal status and is not part of the legal regime. It will be updated in 2008 and published on the Environment Agency's website.<sup>11</sup>
29. The CLEA package forms part of a wider body of government-sponsored guidance. It provides a methodology to help assess whether a child or adult might be exposed to harmful or potentially harmful levels of a contaminant on a given site over a long period of exposure.<sup>12</sup>

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<sup>10</sup> The statutory guidance requires that local authorities' decisions on what is an "unacceptable intake" (i.e. SPOSH) must be assessed on the basis of toxicological risk assessments. Decisions cannot be based solely on such risk assessments because, whilst they can inform an authority about the *possibility of significant harm* at a site, risk assessments cannot answer the policy question about what is acceptable or unacceptable. Thus, in Defra's view, decisions should be firmly based on scientific risk assessment, but they should also take account of the purpose of Part 2A and the local context in which the decision is being made.

<sup>11</sup> The CLEA documents are at [www.environment-agency.gov.uk/landcontamination](http://www.environment-agency.gov.uk/landcontamination).

<sup>12</sup> CLEA does not cover other types of risk to humans, such as short-term and acute exposures to toxic substances; or fire, suffocation or explosion. Nor does it cover risks to the environment or the pollution of water.



30. When an assessor investigates a site under Part 2A (on a site where the determination would depend on SPOSH) the initial aim is to find out whether there is a *possibility of significant harm*, and if so the nature and level of the risks involved. This will inform the local authority’s judgement on whether or not SPOSH exists.
31. To help with this task, CLEA provides assessors with a software tool into which they can enter various site-specific measurements, estimates and assumptions about the factors that influence chemical exposure on a site. When the process is complete, the tool provides a mechanism to estimate the risks to health from chronic exposure to soil contamination. The CLEA process involves:
- (i) Establishing whether *pollutant linkages* (potential or actual) are present – i.e. that contaminants in soil might affect adults or children via one or more exposure routes (e.g. ingestion, inhalation or skin contact).
  - (ii) Estimating the exposure level at which the substance(s) in question would or might (noting the uncertainty in the data) cause *significant harm* if it were to enter a human. To do this, the assessor would need to choose the best available scientific estimate of the level at which long-term intake of the substance(s) might result in *significant harm* (as defined in the statutory guidance).
  - (iii) Assessing the likelihood that people might be exposed to the substance in sufficient quantities for *significant harm* to occur, based on a series of measurements, estimates and assumptions about how much exposure there is likely to be on a given site. The CLEA model codifies many of these estimation methods and assumptions into a consistent framework allowing direct comparison of exposure with the long-term intake that might cause *significant harm*. The outcome of this process can be related back to the concentration of the chemical in soil, which can be compared with representative site measurements.
32. The CLEA methodology can be used as the basis for assessing risks posed by most contaminating substances. The reliability of the results will depend on the quality of the toxicological and other information used in the framework, and the site specific context in which the assessment is made. For a few substances, CLEA provides *soil guideline values* (SGVs) and *health criteria values* (HCVs), as discussed below, to simplify the initial assessment. For other substances, toxicological data might be available. For example:
- (i) Relevant information may be available from government expert committees such as the Committee on Carcinogenicity (COC) or the Committee on Toxicity (COT), or from well regarded international sources such as the World Health Organisation.
  - (ii) There may be relevant data available from studies supported by other authoritative bodies which could be considered. Assessors may also consider evaluations prepared by other professional organisations and consultancies, provided the local authority is satisfied they are based on good science and are appropriate to decisions being made under Part 2A.
  - (iii) For a great many other substances, information may be insufficient for a robust assessment of the risk to human health. Advice on how to proceed in such circumstances is at paragraph 43 below.

## CLEA soil guideline values

33. The CLEA package provides some specific figures for some common contaminants, in the form of *health criteria values* (HCVs) and *soil guideline values* (SGVs).
34. The Environment Agency and Defra have published HCVs for 23 substances (including groups of chemicals like dioxins) under the old framework set out in report CLR 9<sup>13</sup>. HCVs describe a level at which substances might pose either *no appreciable risk* or a *minimal risk* to human health, depending on whether the substance is a *threshold* or *non-threshold* substance. That is to say:
- (i) “Threshold substances” are those for which it is possible to identify a level of exposure at and below which they do not produce an adverse effect. The precise level of this threshold may vary between individuals. HCVs for such substances describe a daily level of exposure over a lifetime where the Government considers there is likely to be *no appreciable risk* to human health.
  - (ii) “Non-threshold substances”, which include most carcinogens, pose an inherent risk even at any level of exposure (although probability of harm rises with exposure). For these substances, the HCVs describe a level of exposure at which the Government considers there is only a *minimal risk* to human health. The basis for deciding minimal risk is explained in Annex B.
35. The Environment Agency and Defra published SGVs for 10 substances<sup>14</sup>. SGVs are based on the HCVs<sup>15</sup>. They describe concentrations of contaminants in soil at which (in the Government’s view) there would be *no appreciable/minimal* risk to human health in four modelled generic land-use situations (residential with gardens, residential without gardens, allotments and commercial/industrial). To illustrate, in calculating the SGV for cadmium on a hypothetical allotment, the Environment Agency estimates the concentration of cadmium in the soil that would lead to a person becoming exposed to a dose of cadmium which matches the HCV (e.g. via direct contact with the soil, or ingesting cadmium from vegetables grown on the allotment).
36. SGVs are not proxy thresholds for SPOSH, and should not be used as such. They describe levels (based on cautious estimates and assumptions in hypothetical example situations) at which concentrations of contaminants in soil may cease to pose *no appreciable/minimal* risk. They do not seek to describe levels at which there might be a SPOSH.
37. Defra considers that assessors can use the updated SGVs (if applied appropriately) as *screening thresholds* for Part 2A decisions on SPOSH. It can be assumed that if concentrations of contaminants on a site are at or below the SGV, it is very unlikely that SPOSH would exist. This is on the basis that: (1) SGVs are based on cautious modelled examples; and (2) SGVs and HCVs describe only where there **may** start to be a risk (or a greater than minimal risk for non-threshold substances).

<sup>13</sup> Substance specific TOX reports will be available from the Environment Agency web site at [www.environment-agency.gov.uk/landcontamination](http://www.environment-agency.gov.uk/landcontamination). Much of the existing information will not be affected by the proposed 2008 revisions to the framework and these reports will continue to be a useful resource until they are superseded by revised material.

<sup>14</sup> The Environment Agency will withdraw all SGV reports published using the current framework when the new technical framework guidance for CLEA is published. New SGV reports will be published as part of a rolling programme until the end of March 2009. Details can be found on the Environment Agency website at [www.environment-agency.gov.uk/landcontamination](http://www.environment-agency.gov.uk/landcontamination).

<sup>15</sup> HCVs for threshold substances also take exposure to non-soil background intakes into account. Where such background intake is more than half of the relevant HCV, the Government view is that a minimum of half of the HCV should be allocated to soil intake. This is considered proportionate since the aim of Part 2A is to address soil contamination and to remediate sites where soil is making the difference.

38. If concentrations of contaminants in soil exceed SGVs, there are three possibilities in terms of determining SPOSH under Part 2A. (1) There may be no *possibility of significant harm*. (2) There may be a non-significant *possibility of significant harm*. (3) There may be a SPOSH.
39. Thus, if an SGV is exceeded, the assessor will usually need to conduct a detailed quantitative risk assessment to discover whether there is a *possibility of significant harm* and, if so, the nature of that risk. Whether or not SPOSH exists will depend on the results of risk assessment, the existence and nature of any pollutant linkages, and (ultimately) the judgement of the local authority. As a general guide:
- (i) For substances where there is an SGV, the more the SGV is exceeded, the more likely it is that an authority should consider the risks to be SPOSH.
  - (ii) Generally, the cautious nature of SGVs means that local authorities may conclude that SPOSH is unlikely to exist at concentrations close to SGVs.
  - (iii) In some cases, land with concentrations of contaminants which marginally exceed an SGV (say, up to a few times the SGV) might give rise to SPOSH if, for example, the receptor is particularly sensitive; or if further assessment finds that exposure is higher than that estimated in the generic SGV; or if there is little uncertainty in the underlying toxicology and HCV.
  - (iv) In other cases an SGV may be exceeded by tens of times and there might be no SPOSH (e.g. if further assessment found that exposure was much lower than that estimated using the generic SGV).

## Legal considerations for local authorities

40. As with many decisions taken by many regulators under many laws, the duty of local authorities to decide whether land is *contaminated land* under Part 2A is balanced by the fact that an affected person can challenge such a decision (i) by making an appeal to the Secretary of State; and (ii) by applying for judicial review in the courts. Ultimately decisions about what qualifies as SPOSH and *contaminated land* would be a matter for the courts.
41. Decisions might be challenged on two broad grounds – (1) that land has been determined as *contaminated land* when it should not have been; or (2) that land has not been determined when it should have been.
42. In the past, some local authorities have been concerned that they may be vulnerable to successful legal challenge, particularly in cases where there is unavoidable scientific uncertainty underlying the risk assessments on which decisions are based.
43. If a decision were challenged, it would be for the courts (or the Secretary of State in appeals) to decide the matter based on the circumstances of the case. However, Defra offers the following general advice:
- (i) Part 2A puts local authorities in a strong position legally, provided they make decisions in accordance with the law. The law clearly makes local authorities responsible for deciding whether or not land is *contaminated land*. It gives them considerable leeway to exercise their judgement, provided their decisions were taken reasonably, on the basis of a risk assessment based on sound science and

reasonable consideration of site and local circumstances. The usual rules of good decision making apply (e.g. there should be full consideration of relevant evidence, and there should be a consistent approach within the authority).

- (ii) There may be cases where a local authority has a good grasp of the risks posed by a site, but it is uncertain whether the risks represent SPOSH in the absence of a detailed legal definition. In such circumstances, the authority must make a decision. The law leaves judgements about what is SPOSH to the authority.
  - (iii) There may be other cases where, unavoidably, there is considerable uncertainty about what risks are present on a site. This may be because of gaps in scientific knowledge, or because there is more than one reasonable method of assessing risks and reaching decisions. Thus there may be no single "correct" decision-making procedure (in terms of legal principle). As a result, it is quite possible that different suitably qualified people, each acting reasonably, could reach different conclusions and make different decisions when presented with the same evidence. Again, the law leaves the judgement to the authority.
  - (iv) In some cases, uncertainties underlying risk assessments may mean that authorities feel they cannot judge whether there is a SPOSH or not. In such cases, they should seek expert advice to confirm their understanding of the science, and they should check that no other Part 2A trigger (e.g. concerning water pollution) applies. Land should only be determined as *contaminated land* on grounds of SPOSH if the authority reasonably believes that SPOSH exists.
  - (v) The uncertainties underlying some *contaminated land* determinations increase the risk that decisions will be challenged. Generally, the greater the uncertainties, the greater the chance that someone might argue convincingly that an authority should have taken a different approach and arrived at a different conclusion.
  - (vi) If someone were to challenge a local authority's decision, the decision is likely to be legally robust provided the authority can demonstrate that it acted reasonably in accordance with the law. For a challenge to be successful the person would have to demonstrate that the authority had behaved unreasonably (i.e. not just that a reasonable alternative method of making a decision could have yielded a different result).
  - (vii) A decision would not necessarily be legally vulnerable simply because the local authority (or another authority) had reached a different conclusion in a broadly similar case. The point is that each case presents a unique set of circumstances and (provided the authority is acting in accordance with the law) a decision in one case may have little bearing on a similar but different case.
44. The advice above relates to cases being taken forward under Part 2A. In cases where land affected by contamination is being dealt with under the planning system, local authorities should ensure they follow the requirements of PPS 23.

## Conclusion

45. Part 2A provides a means of tackling cases where contaminants in land pose a *significant possibility of significant harm* (SPOSH) to people or the environment. It takes a risk-based, case-by-case approach to deciding whether SPOSH exists.
46. Part 2A does not prescribe number-based thresholds because it would be very difficult to produce numbers which are meaningful and proportionate, given the lack of scientific information about many substances and the site specific nature of risks. Instead, it relies on local authorities to assess risks posed on individual sites, then decide whether (in their view) the risks represent SPOSH, and thus whether land qualifies as *contaminated*.
47. The intention of the approach is that local authorities can use their judgement to ensure that Part 2A focuses on the SPOSH it was designed to address, whilst avoiding unnecessary burdens on land where contaminants may be present but there is no SPOSH.
48. In making Part 2A decisions, local authorities are likely to face some difficult decisions caused by uncertainty on the nature of risks. But they should be confident in exercising their judgement on the basis of available information. Part 2A clearly leaves judgements about what constitutes a SPOSH to local authorities, and it is up to them to make decisions.
49. As with many regulatory decisions taken by local authorities, Part 2A decisions may be challenged. If this were to happen, decisions are likely to be legally robust provided the authority can demonstrate that it acted reasonably in accordance with the law. For a challenge to be successful it would have to be demonstrated that the authority had behaved unreasonably, not just that a reasonable alternative method of making a decision could have yielded a different result.
50. Drawing these ideas together, it is clear that the current legal definition of *contaminated land* has both advantages and drawbacks. However, it is arguably the optimum approach for dealing with contaminated land given the likely flaws of alternative approaches.

# Annex A

This annex picks up from paragraph 22(i) of the main paper. It explains how the Part 2A regime might have prescribed risk-based number thresholds (as opposed to case-by-case decision making); and why it chose not to.

Law makers could have prescribed number-based risk thresholds above which SPOSH would be assumed to exist. This would have involved creating legal trigger-points (based on striking a balance between protecting health and the environment, whilst keeping unnecessary burdens to a minimum). For example, these numbers could have taken the form of:

- *Probability of harm thresholds*, under which SPOSH would exist if there were a greater than 1 in x chance of various types of *significant harm* happening.
- *Risk-based concentration thresholds* (more “intelligent” than the blunt concentration thresholds discussed in paragraph 17) with different numbers for different types of land – e.g. residential; allotments; workplaces; agricultural; recreational; different habitats; etc.

For various reasons, Part 2A does not prescribe number-based risk thresholds. For instance:

- There is insufficient science for precise *probability* of harm thresholds to be of use in making Part 2A decisions. Law makers could have prescribed where (in theory) the line between SPOSH and non-SPOSH should lie. But in practice the current state of science would not allow such risks to be measured with sufficient accuracy for such thresholds to be of much use. For instance, the law could say, in relation to carcinogenic substances, that SPOSH would exist if there were a greater than 1 in x chance that a person exposed to the substance might contract cancer over a lifetime. But in the large majority of cases it would not be possible to estimate actual risks to this level of detail.
- *Risk based concentration thresholds* would pose similar problems to the blunt (non-risk based) concentration thresholds discussed above. They would not always be able to reflect actual site conditions, and to be broadly applicable they would need to be set on a precautionary “worst case” basis, which would catch a lot of land unnecessarily.

In the absence of a practicable number-based threshold option (and in recognition of the site-specific nature of risks), Part 2A takes an approach where decisions on whether risks constitute SPOSH must be taken on a case-by-case basis by local authorities.

## Annex B

This annex picks up from paragraph 34(ii) of the main paper.

The Government's view is that the HCVs for non-threshold substances will be developed on the basis that the "minimal risk level" for non-threshold genotoxic carcinogens in soil is equivalent to a parameter derived from an appropriate animal carcinogenicity study (the  $BMDL_{10}$ ) divided by an uncertainty factor of 10,000.

The Government recognises that this method is less well developed for use with human cancer data and when sufficient human data are available it may be appropriate to use alternative methods including quantitative risk assessment (while acknowledging the imprecision of quantitative estimates of cancer risk).

The Government considers that an excess lifetime cancer risk of 1 in 100,000 based on suitable human cancer data would then be an appropriate approach for setting HCVs for soil contaminants based on "minimal risk". These levels are broadly consistent with similar risk levels applied in the UK and internationally for the protection of health from chemicals in other environmental media.

If a guideline is identified that has been produced under a different regulatory regime with UK jurisdiction that is less stringent than "minimal risk", consideration will be given to adopting an equivalent level for soil because it may be disproportionate to enforce a stricter limit for contaminated land. The Environment Agency, with the support of the Food Standards Agency and the Health Protection Agency, where they develop health criteria values for genotoxic carcinogens, will do so with these considerations in mind.

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